Developing A Strategic Skills Planning and Implementation Framework: A Chemical Industries Education and Training Authority (CHIETA) Case Study

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Declaration of Authenticity

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Acronyms

ANC	African National Congress
APP	Annual Performance Plan
ATB	Artisan Training Boards
ATR	Annual Training Report
BRICS	Brazil, Russia, India, China and South Africa
CAIA	Chemical and Allied Industry Association
CHIETA	Chemical Industries Education and Training Authority
CSIR	Council for Scientific and Industrial Research
DHET	Department of Higher Education and Training
ETS	Enterprise Training Support
ETDP	Education Training Development Practices
ETPs	Education and Training Plans
GDP	Gross Domestic Product
HR	Human Resources
HRDCSA	Human Resources Development Council of South Africa
IPAP	Industrial Policy Action Plan
MTEF	Medium Term Expenditure Framework
NDP	National Development Plan
NSA	National Skills Authority
NSF	National Skills Fund

NSDS	National Skills Development Strategy
NQF	National Qualifications Framework
SETAs	Sector Education Training Authorities
SSP	Sector Skills Plan
TFAC	Technical and Vocational Education and Training
TIPS	Technology, Innovation, People and Systems
TVET	Technical and Vocational Education and Training
WSP	Workplace Skills Plan
SLA	Service Level Agreement
SAQA	South African Qualifications Authority
QCTO	Quality Council for Trades and Occupations

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Abstract

Competition for high-quality products and services is no longer limited to domestic markets, as it has expanded to the international arena. The primary objective of this study was to investigate the processes that are employed by the Chemical Industries Education and Training Authority (CHIETA) and its stakeholders to address the skills phenomenon. The study aimed to determine whether the practices that are implemented by the CHIETA and its stakeholders in the Gauteng Province of South Africa, are adequate and sustainable. The researcher adopted a mixed-methods approach, by utilising a pragmatic orientation and by employing the case study method. The theoretical frameworks that were employed in this study encompassed dynamic capabilities, stakeholder strategic frameworks, and the McKinsey 7S framework. This study contributes an African context to the realm of strategic skills planning and implementation. The anticipated contribution of this study extends beyond the academic literature, as it also encompasses the practical implications within the strategic skills domain. The findings of this study revealed that although the CHIETA and its chemical stakeholders practice strategic skills planning and implementation, these efforts are not significant enough to effect substantial changes in the economy. To address this issue, the study proposes closer collaborations and an innovative approach to strategic skills planning and implementation.

Keywords: Strategy, planning, skills, development, implementation, SETA, workforce

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CHAPTER 1

INTRODUCTION AND OVERVIEW

1.1 Introduction

This chapter outlines the background to the study of strategic skills planning and implementation within the Chemical Industries Education and Training Authority (CHIETA), and its strategic skills stakeholder companies. The CHIETA is one of the 21 Sector Education and Training Authorities (SETAs) in South Africa. The SETAs were established through the Skills Development Act No. 97 of 1998. The importance of skills to an economy cannot be over emphasised. Employee skills are critical, and they are an imperative for organisations to adapt, to survive and ultimately to compete in the global economy. The implications for South Africa are even dire, coming from an apartheid system where education and skills were designed to perpetuate inequality, with the minority as the master and the majority as subservient. With old masters having either migrated or retired, and employees facing a more demanding, discerning, and knowledgeable consumer, strategic skills are non-negotiable. Given that the modern economy is a global village, competition is a reality. To remain competitive, employer organisations must equip employees with relevant and cutting- edge skills to differentiate their products/services.

1.2 Background

Skills are important for personal, organisational and economic development purposes. As employees and learners acquire relevant skills; their societal status, earning power, job choices and employee value to employer organisations increase significantly. The purpose of SETAs is to train and improve learner and employee skills for both industry and the country. SETAs are funded through a levy grant system (Skills Development Levies Act No. 9 of 1998). The Skills Development Levies Act provides an institutional framework to devise and implement national, sector and workplace strategies to develop and improve the skills of the South African workforce. In addition, it provides for the financing of skills development and for the regulation of employment services (South Africa Qualifications Authority (SAQA, 1995) in the country.

As of the first quarter of 2023, South Africa's unemployment rate was 32.7% (Statistics South Africa, 2023). Most of the people who are not in Education, Employment, or Training (NEETs) are the youth, (between the ages of 15 and 35 years) and these make up 70% of the nearly 6.7 million South Africans who are currently unemployed (Statistics SA, 2023). Although SETAs have been operational since 2000, the country still faces a major skills shortage. According to Turner, Halabi, Sartorius and Arendse, (2013), the skills uptake is slow and completion rates are unacceptably low, having reached a high of 19% between 2005 and 2007. For this trend to be reversed, SETAs must develop and implement strategic skills that directly address the economy's skills needs.

This study examined how the CHIETA and its stakeholders address strategic skills planning and implementation in South Africa. Strategic skills planning is a set of processes that are used by the CHIETA for the purpose of gaining a better view of current, medium- and long-term skills requirements in the chemical sector. This is done through reaching a common understanding among the different stakeholders and aligning these different interests towards a shared goal (Gajda, Mikalauska & Navickas, 2020; Dayan, Heisig & Matos, 2017; Naqvi, Zeeshan & Assi, 2021). A good strategic plan needs to be implemented to bear results (George, Walker & Monster, 2019). This realisation necessitated that the researcher covers strategic skills implementation in this study. Strategic skills implementation is the conversion of a strategic skills plan into action and might include a redesign or reconfiguration of the organisation as well as its organisational processes and culture (Mitchell, 2018). It is argued in this study that strategic skills implementation is required to reposition the CHIETA in line with its vision (Kabeyi, 2019). SETA funding is legislated and there is adequate funding to realise the skills vision.

This study further argues that collaboration between the CHIETA and its strategic skills stakeholders is critical if the CHIETA is to contribute meaningfully to skills development in the country, (Rybnicek & Konigsgruber, 2019). More so, successful collaboration will ensure a continuous churning out of learners and employees with the right skills set to fill gaps in the labour market. Research philosophy is discussed in the following section.

1.3 Research Philosophy

Any formalised enquiry is guided by a research paradigm (Davies & Fisher, 2018). A research paradigm defines a researcher's philosophical orientation and has significant implications for all decisions made in the research process, including the choice of methodology and methods (Al-Ababneh, 2020). Included in this description are ontology and epistemology (Kivunya & Kuyini, 2017) these are discussed in the following sections.

1.3.1 Ontology

The ontology of constructivism assumes relative and constructed realities as well as intangible mental constructions based on experience and social context (Pilarska, 2021; Slutskiy and Slutskiy, 2021). These constructions are local, and they are very specific in nature. Their form and content are largely dependent on the individual or the groups of persons holding such constructions (Eybers, 2018). This is echoed by Petia, Edward and Laurie (2018) who reason that there are no absolute truths in life, as every person's truth is shaped by both their personal and shared experiences. Given this scenario, it is possible for people who share similar experiences but encounter different outcomes to have different truths on the same matter (Han & Ellis, 2019). The researcher is from an accounting training and practice background therefore, primarily, has a rigid quantitative, predictive and logical outlook. Despite this background, the researcher undertakes a constructivist paradigm as it shares the attitude of subjectivism toward reality and accepts relativism or the existence of locally reconstructed and constructed realities (Slawecki, 2018). Additionally, Creswell and Creswell (2018) recommend a constructivist worldview as it addresses interaction processes among individuals. The researcher seeks to capture interactions with strategic skills practitioners and interpret the meanings that the research participants have about strategic skills planning and implementation.

Epistemology is discussed next.

1.3.2 Epistemology

Epistemology is important in research as it deals with knowledge acquisition. Epistemology gives rise to questions such as: Who are the role players? Where do they derive their authority from? and What are the boundaries? (Ng, Kangasjarvi, Lorello, Nemoy & Brydges, 2019). In this study, the major players are the CHIETA, the employers, the skills development providers, the learners and the unions within the chemical industry as well as the Department of Higher Education and Training, (DHET). All the constituencies derive their authority from the Skills Development Act of 1998.

According to Al-Ababneh (2020) epistemology deals with how things come to be known and accepted. Positivism, realism and interpretivism are philosophies associated with epistemology. The epistemologies chosen for this research was a combination of the positivist and constructivism. Positivism refers to the use of a hypothetico-deductive method to verify a hypothesis where functional relationships can be derived between the causal and the explanatory factors (Park, Konge & Artino, 2020). The positivist philosophy was selected because the study focused on the cause and effect of the different identified strategic skills development variables. The specific variables considered in this research were strategic skills planning, innovation, collaboration and strategic skills implementation. A positivist paradigm is also best where outcomes are caused by identifiable and controllable factors, which was the case in this study. Given that the researcher was an employee of the CHIETA there was need to separate himself and experiences from the process to ensure objectivity, (Anderson & Holloway, 2020).

The researcher was also cognisant of the fact that reality or truth is socially constructed hence the application of the constructivist paradigm. This allowed the researcher to investigate the subject matter whilst engaging with the participants to determine their experiences and the meanings they assign to them.

The problem statement is discussed next.

1.4 Problem Statement

Skills are the drivers of economic growth and South Africa cannot transition into a developed economy without a skilled workforce. Global competition and the speed at which business processes are becoming redundant, have necessitated the need for organisations to up-skill their human resources and be innovative to remain relevant (Nurqamarani, 2017). Currently, there is no clear functioning skill integration matrix between the private sector, the government and the SETAs. As a result, South Africa faces a serious shortage of critical skills required to develop the economy. The skills shortage impedes the potential of the chemicals industry from having a multiplier effect of contributing 12 times the job creation and to more than 21% of the manufacturing gross domestic product "GD" (Burger, 2019; Research & Markets, 2018). Thus, the chemicals sector in South Africa can only become globally competitive with a skilled workforce.

The current CHIETA strategic skills planning and implementation processes, coupled with the existing levels of innovation and collaboration between the CHIETA and its strategic skills stakeholders is not capable of delivering the desired strategic skills. Through effective collaborations with stakeholders within the chemical industry ecosystem, strategic skills development planning will enable the sector to be; globally competitive, economically sustainable as well as to provide employment opportunities to learners. The research aim and the objectives are presented in the section below.

1.5 Research Aim and Objectives

The aim of this study was to develop a strategic skills planning and implementation framework for the CHIETA.

The objectives of the study were as follows:

i. To ascertain whether the CHIETA and its strategic skills stakeholders practice strategic skills planning;
ii. To determine the level of collaboration between the CHIETA and its strategic skills stakeholders;
iii. To ascertain the level of strategic skills innovation within the CHIETA and its strategic skills stakeholder companies;

iv. To determine the level of strategic skills implementation within the CHIETA and its strategic skills stakeholder companies;
v. To ascertain the factors that impede strategic skills implementation within the CHIETA;
vi. To investigate strategic skills planning and implementation frameworks for the CHIETA.

Therefore, the research questions are as follows:

1.6 Research Questions and Hypothesis

1.6.1 The Primary Research Question

The primary research question in this investigation is formulated as follows:

How can a strategic skills planning and implementation framework be developed for the CHIETA?

The secondary research questions are as follows:

i. To what extent does the CHIETA and its stakeholders practice strategic skills planning?
ii. What is the level of collaboration between the CHIETA and its strategic skills stakeholders?
iii. To what extent does the CHIETA and its stakeholder companies embrace innovation in the chemical sector?
iv. To what extent are the CHIETA and its strategic skills stakeholder companies involved in strategic skills implementation?
v. What are the factors that impede strategic skills implementation within the CHIETA?
vi. Which strategic skills planning and implementation framework is appropriate for the CHIETA?

The research hypotheses are presented next.

1.6.2 Hypothesis

A hypothesis is a formal statement of the expected relationships between variables in a specified population (Kaur, 2017). The importance of developing a hypothesis in research is that it assists in research replication through drawing up of logical conclusions and in the establishment of relationships between variables (Anupama, 2018). The dependent variable in this research is strategic skills development whereas the independent variables are strategic skills planning, collaborations, innovation and strategic skills implementation. There are two types of hypotheses, namely the null and the alternative which are denoted as H0 and H1, respectively. While the alternative hypothesis codifies the expected answer to the research question, the null hypothesis is the complement of the alternative hypothesis and it contradicts the researchers' expectations (Lang, Sweet & Grandfield, 2017).

Hypothesis 1

H_0:Strategic skills development is not significantly determined by strategic skills planning.

H_a:Strategic skills development is significantly determined by strategic skills planning.

Hypothesis 2

H_{o1}:Strategic skills development is not significantly determined by strategic skills collaborations.

H_{a1}:Strategic skills development is a significantly determined by strategic skills collaborations.

Hypothesis 3

H_{02}:Strategic skills development is not significantly determined by strategic skills innovation.

H_{a2}:Strategic skills development is significantly determined by strategic skills innovation.

Hypothesis 4

H_{03}:Strategic skills development is not significantly determined by strategic skills implementation.

H_{a3}:Strategic skills development is significantly determined by strategic skills implementation.

The section below presents the conceptual framework adapted for this study.

1.7 Conceptual Framework

A conceptual framework was developed thereby providing the context and the processes involved in strategic skills planning and implementation. The underlying thread as depicted in the figure below is collaboration.

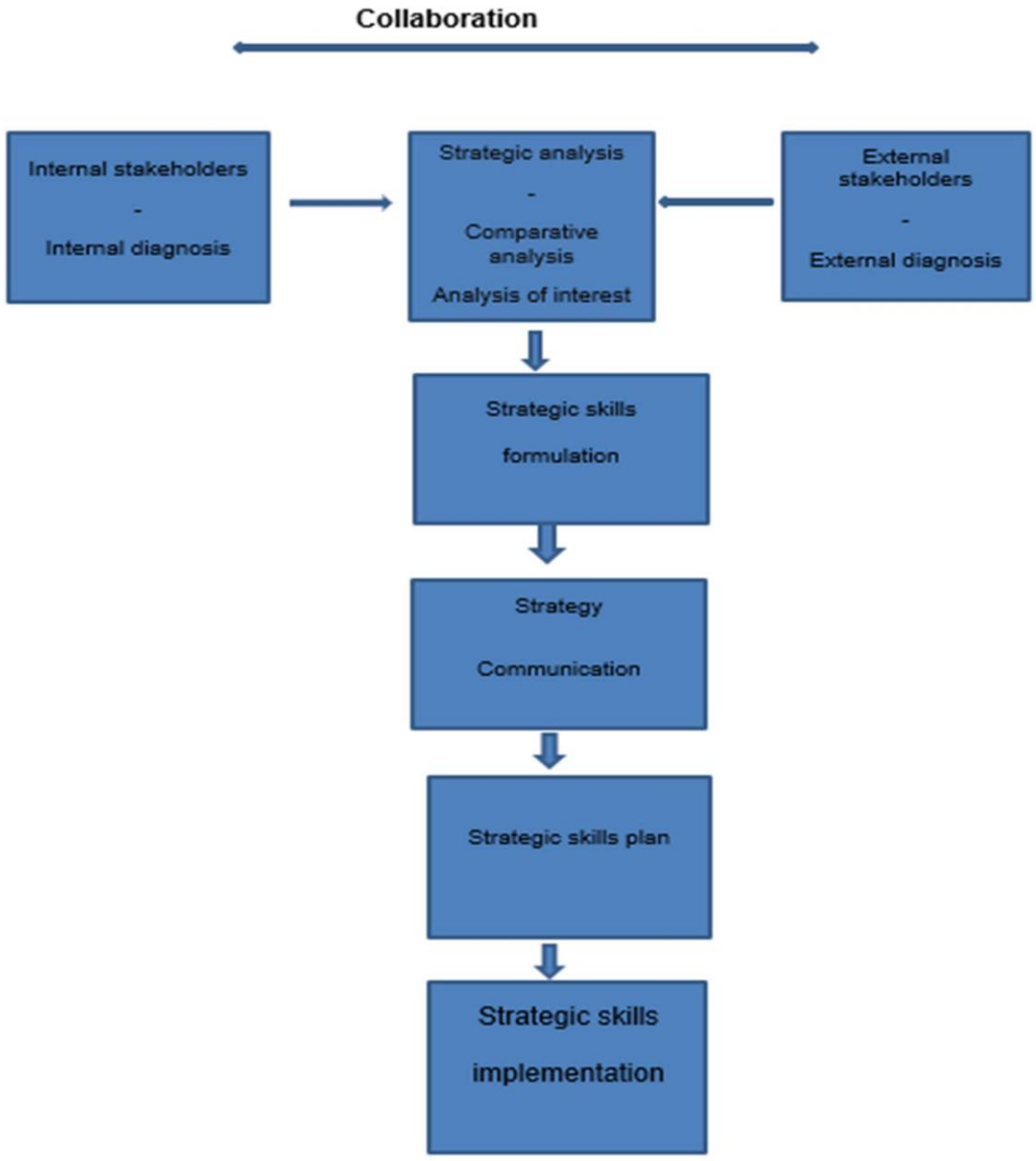

Figure 1.1: Conceptual Framework

Adapted: Fuertes et al (2020)

1.8 Significance of the Study

This study focused on the CHIETA because of the centrality of skills to national economic development, employment and competition. The chemical industry contributes 3.4% to the GDP and 22.8% to manufacturing (Chemical and Allied Industry Association, 2019). Research on strategic skills planning, innovation, collaborations and strategic skills implementation has the potential to increase member company participation, the rendering of relevant in demand strategic skills thereby enhancing learner employment opportunities and in so doing, contribute towards redressing socio-economic disparities in South Africa. There are limited strategic skills planning case studies in South Africa, additionally, (McGrath, Ramsarup, Zeelen, Wedekind, Allais, Lotz-Sisitka, Monk, Openjuru and Russon, 2020) posit that strategic skills literature in an African context is minimal. This has changed marginally but is still not at a level comparable to developed economies. Investment in strategic skills has enabled advanced economies to become more innovative, achieve high levels of productivity, as well as produce high quality goods and services (Kumar, Sezersan, Garza-Reyes, Gonzalez & Al-Shboul, 2019).

A range of studies conducted in the United Kingdom (UK), Brown, Giang and Huong, (2020), in India; Dixit, Mandal, Sawhney and Singh, (2017); Singh, (2012) and in Germany, the Netherlands and in Sweden (Thelen, 2019) as well as in Spain (Mara, Brunet and Cabré, (2020) have shown the positive contribution skills can make to productivity, competition and to economic development. There is empherical evidence that confirms that economic differentials between countries can be attributed to skilled human capital (Wirajing, Nchofoung & Etape, 2023; Lee & Vu, 2020; Hanushek & Woessmann, 2023). The above-mentioned studies were carried out in a country each representing the Asian and the European continents. There are economic, cultural and social differences between South Africa, India, Spain, the Netherlands, Germany and the UK. Additionally, the relative immaturity of strategic skills planning and implementation as evidenced by the inconsistent and conflicting views on the subject renders this study significant (Alharthy, Rashid, Pagliari & Khan, 2017).

Whilst the various studies mentioned above provide crucial insight on skills development in several different countries, most of them adopt a single methods approach, for example the qualitative or the quantitative approach.

This study is unique in that it used a mixed methods approach by combining both the qualitative and the quantitative methods in a single study for purposes of gaining a deeper understanding of the research question. The advantage of using this approach is that it allows researchers to obtain a more comprehensive understanding of a phenomenon by triangulating data and also provides for a more nuanced and complex analysis of data that cannot be achieved by using a single method (Ngulube, 2020).

Furthermore, this study contributes to strategic skills implementation literature, which continues to receive less attention in strategy literature (Tawse & Tabesh, 2021; Wanjiru Kabui, 2020). According to Namada, (2020) strategic skills implementation is often unpopular and unattractive because it is more demanding than strategic skills planning. Additionally, the researcher anticipates that the study might assist the CHIETA to reflect on its own approaches to strategic skills development and identify areas of improvement, thereby leading to better outcomes for learners and for employer organisations. The section below discusses the delimitations of the study.

1.9 Delimitations of the Research

This study was constrained by several factors. Of the 21 SETAs, the study only covered one, which, to some extent, limits its external validity. Furthermore, the study only focused on one type of public sector entity, which is namely the SETAs, and excluded local, provincial and national departments. Private business and the not-for- profit organisations were also excluded from the study. Due to the geographical location of the CHIETA, not all the nine provinces in South Africa were covered. This may impose a regional bias and it may impact on the generalisability of the findings. The researcher also acknowledges that there are other strategic planning and implementation theoretical frameworks other than the three that were adopted in this study. The three referred to in this study were chosen because of the uniqueness of the SETAs. The CHIETA, is a schedule 3 public entity. Schedule 3 public entities are wholly funded by government (National Treasury, 2010). This means that a SETAs income is guaranteed irrespective of delivery. The section below discusses research methodology.

1.10 Research Methodology

Research methodology is the systematic, scientific and theoretical analysis of the methods utilised in research (Patel & Patel, 2019). This section summarises the research design that was used, the population and the adopted sampling procedures, additionally, the research instruments and the data collection methods that were used in the study. It also outlines the analysis procedures that were applied in the study. Research design is discussed in the following section.

1.10.1 Research Design and Research Strategy

Research design refers to the rules for communication and reporting research findings (Rahi, 2017). A mixed methods research approach is an inquiry that combines both the quantitative and the qualitative forms (Dawadi, Shrestha & Giri, 2021). An explanatory sequential mixed methods design was used in this study as it appeals to the researcher's quantitative background. According to Creswell and Creswell (2018), "it involves a two-phase data-collection project in which the researcher collects quantitative data in the first phase, analyses the results, and then uses the results to plan (or build on to) the second, qualitative phase". The quantitative findings will inform the researcher about the kinds of participants to be selected for the qualitative phase and the kinds of questions that should be asked (Creswell & Creswell, 2018). The researcher wanted to test the relationships between a number of variables, and this required gathering and processing of considerable quantitative data. According to Jenkins and Quintana-Ascencio, (2020) supported by (Lakens, 2022; Kruschke, 2018) a sample size in quantitative approach should be consistent and be capable of identifying clear patterns and a figure >=25 as the minimum. The researcher intended to collect qualitative data that explained the initial quantitative findings.

The researcher made use of a case study. According to Pathiranage, Jayatilake and Abeysekera (2020) a case study is an empirical investigation that examines a phenomenon in detail and within a real-life context. The research strategy applied was a mixed methods approach. In respect of the interviewees, the researcher had no pre-determined sample size as the objective was to achieve saturation (Hennink & Kaiser, 2022; Braun & Clarke, 2021).

For this study, the value of the mixed methodology was the ability to make sense of the world from a pluralistic view (Ryba, Wiltshire, North & Ronkainen, 2022). This view was also adopted to assist the reader to better understand the study, as well as to increase the validity of the findings. Quantitative research is appropriate for explaining phenomena by collecting numerical data that is analysed using statistically based methods (Stockemer, 2019; Mohajan, 2020). This data was collected using a survey. Qualitative research is most appropriate in the provision of explanatory data (Mohajan, 2018). This data was collected through interviews. The section below presents the research population and explains the sampling techniques applied.

1.10.2 Population and Sampling

A research population refers to the total collection of the elements about which inferences are made, and it covers all possible cases that are of interest to the study (Shukla, 2020). In addition, a population is defined as a group of individuals or a universe with at least a common characteristic which distinguishes that group from other individuals (Asiamah & Mensah, 2017). A population is usually too large for study purposes, hence the need for a sub-population that the researcher focuses on. In this study, the sub-population constituted the CHIETA employees and the representatives of its strategic skills stakeholders (Asiamah, Mensah & Oteng-Abayie, 2017). The sample was made up of representatives from strategic skills members whose companies submitted WSPSs/ ATRs, union representatives and skills development providers who work with the CHIETA.

A random sampling strategy was used for the quantitative phase for all stakeholders excluding the CHIETA whilst the purposive sampling technique was utilised on CHIETA employees as well as for the qualitative phase. With random sampling, every member of a population stands an equal chance of being chosen (Andrade, 2021). On the other hand, purposive sampling is a strategy in which certain individuals or events are deliberately selected to provide important information that cannot be obtained through other choices (Andrade, 2021). Respondents and participants in this research were chosen as the researcher believed that they warrant inclusion based on their possession of a unique characteristic and in this study, this was the strategic skills knowledge (Denieffe, 2020). Research instruments are discussed next.

1.10.3 Research Instrument

A research instrument is a tool that is used for research data collection (Bichi, Talib, Embong, Supie, Khairuddin & Diah, 2019). Questionnaires are an example of a research tool, and they fall within the broader definition of survey research, (Langbecker, Caffery, Gillespie & Smith, 2017). A survey is a collection of a large quantity of evidence, or evidence that will be converted to numbers (Kurtkoti, 2020; Krause, Luzzini & Lawson, 2018). The quantitative primary data for this study was collected using a questionnaire, that was developed by the researcher, it was informed by the reviewed literature. This tool was pilot tested before distribution to the strategic skills practitioners.

Interviews are described as an interchange in which one person elicits information or an expression of opinion from another person or persons on a subject of interest (Brown & Danaher, 2019; Young *et al*., 2017). Qualitative research data was collected using an interview schedule, developed by the researcher, this too was informed by reviewed literature. Piloting is important to research studies, (Malmqvist, Hellberg, Mollas, Rose & Shevlin, 2019). The interview schedule was specifically developed to address identified gaps or those areas where further clarification or confirmation was required after the quantitative analysis. Participants holding positions as strategic skills practitioners were requested to express their knowledge through conversations that were held during the interview process (Moser & Korstjens, 2018; Young, Rose, Benitez-Capistros, Derrick, Finch, Garcia, Home, Marwaha, Morgans, Parkinson, Shah, Wilson & Mukherjee, 2017). The following section deals with the data collection methods applied in this research which are further explained in Chapter 3.

1.10.4 Data Collection

The collection of data in this study, “proceeds in two distinct phases with random and purposive quantitative sampling in the first phase and with purposive sampling in the second, qualitative phase” (Creswell & Creswell, 2018). The researcher identified the quantitative findings that would be followed up on as well as research participants from whom to collect data in the second qualitative phase. Creswell and Creswell (2018) explain that “the qualitative follow-up may group respondents to the quantitative phase into different categories and conduct qualitative data collection with individuals representing any of these categories”.

Detailing the data collection method that is utilised in research is important as the process is determined by the methodology and the analytical approach applied by the researcher (Henriet, Burnay, Dalimier, Hurley & Henry, 2021). As mentioned earlier, the data for this research was collected using two tools, the questionnaire and the interview schedule. Questionnaires were sent by emails, survey monkey and to those who were within the same block as the researcher, the questionnaires were hand delivered. The data for interviews were collected either through telephonic or face to face interviews whereas for the quantitative research it was through a survey. Data analysis is discussed next.

1.10.5 Data Analysis

Quantitative data was analysed using the Statistical Package for Social Sciences version 25 (SPSS) and the qualitative data was analysed using the ATLAS.ti software to identify themes or patterns. This is discussed fully in Chapter 3. The section below presents research rigour.

1.11 Research Rigour

In research, it is important that rigour be demonstrated as this allows fellow researchers to understand and replicate the findings that were made (Maula & Stam, 2020). Validity and reliability are discussed below.

1.11.1 Validity and Reliability in Quantitative Research

Validity in research refers to how well the research results represent the true findings among similar elements outside of the given study and also refers to the accuracy of the measure of that which it was originally intended to (Patino & Ferreira, 2018). There are four main types of validity, namely content validity, face validity, construct validity and criterion-related validity (Haradhan, 2017). The researcher tested validity through piloting the questionnaire and interview schedule (Gani, Imtiaz, Rathakrishnan and Krishnasamy, 2020). This is covered in greater detail in chapter 3.

The researcher utilised the Cronbach's coefficient alpha method to determine the internal consistency (reliability) of surveyed data (Taherdoost, 2020). Reliability test results range between zero and one, where an absolute reliable instrument equals

one, and an unreliable instrument indicates a score equal to or closer to zero (Mohajan, 2017). Trustworthiness is covered next.

1.11.2 Trustworthiness

The researcher ensured trustworthiness by maintaining a rich and thick verbatim description of the participants' responses (Alase, 2017). Additionally, by seeking participants' confirmation of the accuracy of the transcribed interviews as well as inviting them to comment on whether the final themes and concepts adequately reflected the phenomena that were being investigated (Messina, Barros, Soares & Matopoulos, 2020). Ethical considerations are discussed next.

1.12 Ethical Considerations

Knight (2019) defines ethics as referring to the researcher-participant relationship, it touches on such matters as consent, anonymity and confidentiality. Some of the ethics values are fairness, trust, accountability and mutual respect (Ichendu, 2020). Anonymity and confidentiality were assured during the course of this study. Structure of the thesis is presented below.

1.13 Structure of the Thesis

The thesis is structured as follows:

Chapter 1: Introduction

The introductory chapter of the study provides an overview, the background, and the statement of the problem under investigation. The chapter also sets the tone and the direction in which the study was conducted by highlighting the contextual setting, the conceptual framework, the research plan, and the structure of the whole research study.

Chapter 2: Literature review

The chapter provides a comprehensive review of literature on strategic skills planning and strategic skills implementation from both a South African and an international perspective. Theory and frameworks on strategic skills planning and strategic skills implementation are presented and examined. The chapter also covers strategic skills collaborations and strategic skills innovation.

Chapter 3: Research methodology

The research methodology used in the study is explained in more detail. Additionally, the chapter provides justification for choosing a mixed methods approach to achieve the research aims and the objectives. It also discusses the techniques used to collect data, the sampling techniques, the data analysis approach and issues of reliability and validity.

Chapter 4: Presentation of the research findings

The chapter presents the research findings as obtained from the fieldwork.

Chapter 5: Data analysis and discussion

The findings are analysed and discussed. Where possible, the findings are linked to reviewed literature.

Chapter 6: Conclusions, return on investment, summary and recommendations

The final chapter provides a summary of the thesis. A framework is presented to address identified gaps. Conclusions are provided and so are recommendations based on the research objectives. Finally, suggestions for direction for future studies is made.

1.14 Conclusion

This chapter provided an introduction to the study on strategic skills planning and strategic skills implementation in the SETAs in the Gauteng Province of South Africa. It also presented the research problem statement. The chapter further identified the research aim and the objectives from which the research questions were developed. Research significance of the study was presented and so were the delimitations of the study. Finally, the chapter outlined the thesis structure. Chapter 2 presents the literature review.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides a comprehensive literature review on skills development, strategic skills planning, strategic skills collaborations, strategic skills innovation and strategic skills implementation, all which serve as contexts to the study. The chapter also provides an introduction to the legislation governing SETAs in South Africa. International and African literature on strategic skills is examined herein, with specific reference to skills development in Germany, South Korea and Singapore as these countries excel in strategic skills development (World Economic Forum, 2017). The researcher also found it of interest to include the (BRICS) member countries; Brazil, Russia, India and China. This is because South Africa is a member of BRICS. The researcher was informed by a pragmatic paradigm and identified literature to advance and help posit the study beyond an objectivist conceptualisation (Kelly & Cordeiro, 2020). The next section discusses the Skills Development Act (Act 97 of 1998). This Act is the foundation for skills development in South Africa. It is therefore important that the literature review starts by unpacking the Skills Development Act.

2.2 The Skills Development Act

The purpose of the South African Skills Development Act (Act 97 of 1998) is to:

i) Develop the South African workforce skills;

ii) Encourage employers to use the workplace as an active learning environment;

iii) Increase the levels of investment in education and training in the labour market;

iv) Encourage workers to participate in learnerships and other training programmes;

v) Improve employment prospects of persons who were previously disadvantaged by discrimination; and

vi) Redress those who were disadvantaged through discriminative training and education.

Furthermore, the Act aims to ensure quality of education and training in the workplace, to assist job seekers to find work and retrenched workers to re-enter the labour market. Additionally, it aims to assist employers to find qualified employees and to provide as well as to regulate employment services. The above purposes are to be achieved by establishing an institutional and financial framework comprising of the National Skills Authority (NSA) and the National Skills Fund (NSF), a skills development levy-grant scheme, SETAs, labour centres and the Skills Development Planning Unit. The Act further encourages partnership between the public and the private sectors of the economy in the provision of education and training in the workplace. Additionally, the Act urges SETAS to co-operate with the South Africa Qualifications Authority (SAQA). SETAs are discussed next.

2.3 Sector Education and Training Authorities (SETAs)

SETAs are statutory bodies that were formed in terms of the Skills Development Act (Act 97 of 1998). The mandate of SETAs is to understand the education and the training needs in their respective sectors, to provide skills needs, to grow training opportunities in the workplace and to improve the quality of formal education and training (Skills Development Levies Act, 9 of 1998). There is a total of 21 SETAs in South Africa. Each of these SETAs is responsible for a specific industrial or a commercial sector. SETAs' revenue source is legislated in terms of the Skills Development Act (Act 97 of 1998). The Skills Development Act (Act 97 of 1998) permits SETAs to identify scarce and critical skills as well as to invite member companies and skills development providers to apply for discretionary grant project funding in identified skills areas.

SETAs are funded through a 1% skills levy on an organisation's salary and wage bill. This is compulsory for companies whose salary bill is equal to or exceeds R500 000.00 per year (Skills Development Levies Act 9 of 1998). The National Skills Authority (NSA) was created to provide guidance to the national skills agenda. The functions of the NSA include, among others, advising the Minister of the Department of Higher Education and Training (DHET) on national skills development strategy and policy,

consulting with the Minister of Higher Education and Training on SETA service level regulations. In addition, the NSA also gives advice on SETA grants and SETA changes, amalgamations, dissolutions and their administration. The NSA liaises with the Quality Council of Trades and Occupations (QCTO) on occupational standards and qualifications, it also monitors the quality of learning as well as standards in workplaces.

The Skills Development Act prescribes that a minimum of 80/20 percent split of discretionary grant funding, with 80% for pivotal and the balance of 20% spend on non-pivotal projects. Pivotal refers to professional, vocational or other academic learning programmes, which result in qualifications or part qualifications on the National Qualifications Framework (NQF) whilst non pivotal refers to non-credit bearing qualifications (Skills Development Levies Act, 1998).

SETAs' primary purpose is to service member companies. The membership of the CHIETA includes companies in the following chambers; pharmaceuticals, fertilisers, surface coatings, petroleum, glass, speciality and base chemicals, fast moving goods as well as explosives. These member companies remit 100% of their skills levies to the South African Revenue Service (SARS) which in turn transfers 80% of these levies to the DHET, which has the ultimate responsibility of transferring these funds to the SETAs. The difference of 20% is paid over to the NSA. Employers may claim 20% of their skills development levy contribution in the form of mandatory grants from the respective SETA. The qualifying criterion is for a member company to submit a Workplace Skills Plan (WSP) and/or an Education and Training Plan (ETP) to the relevant SETA. The Skills Development Levies Act 9 of 1999 stipulates that the balance of the skills levy that is received by a SETA (80%) must be split between the SETA's administration (10.5%) of which 0.5% is paid over to the QCTO and the balance of 49.5% which is allocated to discretionary grants funding (Republic of South Africa, 1999a).

In addition to the 20% mandatory grant funding, member companies may also apply directly for discretionary grant funding by submitting proposals for training in scarce and critical skills as well as in other programmes as determined by the SETA. Alternatively, they may apply through or jointly with a skills development provider. The Skills Development Act grants SETAs the discretion to determine scarce and/or critical

skills based on an analysis of WSPs submitted by employers. The Framework for Identifying and Monitoring Scarce and Critical Skills describes scarce skills as "occupations in which there is scarcity of qualified and experienced persons, currently or projected in the future, either because such skilled people are not available, or they are available but may not meet employment criteria" (Education, Training and Development Practices Sector Education and Training Authority 2016).

The Framework for Identifying and Monitoring Scarce and Critical Skills (2005) distinguishes between absolute and relative scarcity. Absolute scarcity refers to the unavailability of suitably skilled persons in the labour market to meet a skills shortage. This may be due to new or emerging occupations, a lack of suitably qualified people or an insufficient number of people who are enrolled in programmes to meet new demands. Relative scarcity, on the other hand, is when suitably skilled people are readily available in the labour market, but they may have insufficient work experience, or they might be located outside of a specific geographical area, or they may not meet desired equity considerations (Education Training Development Practices, 2016). Some South African examples of these include general management skills, communication and customer handling skills, teamwork skills, problem-solving (or cognitive) skills, e.g. language and literacy skills, as well as technology skills (Framework for Identifying and Monitoring Scarce and Critical Skills, as cited in ETDP SETA, 2016). Whereas scarce skills can be addressed by equipping people with NQF registered qualifications such as degrees, diplomas, certificates, or part qualifications, critical skills can be acquired through registered part-qualifications or non-registered short courses within a qualification. Discretionary grants funding is subject to funds availability and is entirely at the discretion of the SETAs (Skills Development Levies Act (Act 97) of 1998).

SETAs are agencies of strategic skills development in South Africa. It is therefore important to understand their statutory functions. These are set out in the Skills Development Act (Act 97 of 1998) and are listed below:

a) To develop a sector skills plan within the framework of the National Skills Development Strategy (NSDS);

b) To implement the sector skills plan, promote learnerships and to register learnership agreements;

c) To apply to the QCTO (formerly, South African Qualifications Authority) for accreditation;

d) To collect and disburse skills development levies in the sector;

e) To liaise with the NSA in relation to the national skills policy, the national skills development strategy and the sector skills plan.

f) Each SETA must report to the Director-General on income and expenditure and the implementation of its sector skills plan.

g) The SETAs must liaise with the employment services of the Department of Labour to improve on the information about employment opportunities and between education and skills development providers and the labour market.

h) Each SETA must appoint the necessary staff for the performance of its functions, and perform any other duties imposed by the Skills Development Act.

As can be seen from the list of SETA functions, the objective was to establish a full and complete strategic skills value chain. The governance of public entities is critical to holding them accountable. For governance purposes, the Skills Development Act (Act 97 of 1998) stipulates who should sit on the governance structures.

2.3.1 SETA Board Composition

The Skills Development Act (Act 97 of 1998) prescribes the composition of SETA governing boards as follows:

A SETA board shall consist of equal representation from the two constituencies of both organised labour and organised employers. There are community/government representatives, though these are fewer than the other categories. The Skills Development Act (Act 97 of 1998) bestows the Minister of Higher Education and Training with the final approval of the constitution of a SETA. SETAs may establish chambers, and these too must comprise of equal representation from both organised employers and organised labour. The Act empowers the Minister of Higher Education and Training with the authority to appoint an administrator to take over the administration of a SETA should he/she believe that the SETA has failed to perform

its functions, or if there is mismanagement of the SETA finances, or where its membership no longer substantially represents the composition that is contemplated in the aforesaid Act.

The South African National Development Plan is discussed next.

2.4 The National Development Plan (NDP) and the National Skills Development Strategy (NSDS)

The National Development Plan (NDP) was initially developed in 2012/2013 to eliminate poverty and to reduce inequality in South Africa by 2030. According to this plan, poverty will be eliminated through creating employment opportunities, increasing incomes and through increasing productivity (President of the Republic of South Africa, 2012). Poverty and inequality can only be reduced through addressing strategic skills in the economy. Skills development is human resource centred.

The National Skills Development Strategy 2022-2026 has the following objectives; chart a pathway for skills development in line with the government's vision, assess the current status and set-up a skills development system in the country including the identification of areas for improvement in the skills development system (Human Resource Development Council, 2022). The beneficiaries in this strategy are the strategic skills stakeholders vis; SETAs, employees who are represented by labour as well as the private sector as represented by employer representatives and the learners from the various tertiary institutions. Employers benefit through cost reductions in production, increased product and or service quality whilst learners benefit through acquiring relevant and in demand skills qualifications which enable them to secure gainful employment. Those already in employment are presented with choices where their earning potential and mobility are enhanced through acquisition of relevant in demand skills.

The following section discusses the Human Resource Development Council of South Africa.

2.5 The Human Resource Development Council of South Africa (HRDCSA)

Central to South Africa's strategic skills planning is the HRDCSA (Human Resource Development Council, 2022). This is a national, multi-tiered and multi-stakeholder body chaired by the Deputy President of the republic of South Africa. One of the council's key responsibilities is to build the required human resource development base to ensure a prosperous and inclusive South African society and economy. The focus is on the development of a strategy as well as the creation of a platform where social partners can engage to find ways to address bottlenecks in the development of human resources and skills in the country (Human Resource Development Council, 2022).

Standardisation of skills qualifications and programs lead to waste reduction through duplicate elimination. To this end, the Qualifications Council for Trades and Occupations (QCTO), was introduced.

2.5.1 The Quality Council for Trades and Occupations (QCTO)

The QCTO was established to oversee the design, development and the quality of trades and occupations (Skills Development Act, 97 of 1998). The QCTO ensures that all trades and occupations meet a minimum acceptable minimum standard. The South African government introduced strategic planning, monitoring and evaluation and this will be discussed next.

2.6 Public Sector Strategic Planning, Monitoring and Evaluation

All South African public entities and institutions must adhere to the framework for strategic plans and annual performance plans (Public Finance Management Act, 1999). The specific requirements and demands of the framework are detailed below.

2.6.1 Framework for Strategic Plans and Annual Performance Plans

In 2010, the National Treasury developed a framework for Strategic Plans (SPs) and Annual Performance Plans (APPs), which outlines the various accountability documents that all government departments and entities are required to produce (PFMA, 1999).

These documents are to be produced at each of the following stages: planning, budgeting, implementation, reporting, monitoring and evaluation. The APPs and SPs should be revised every five years and a new or revised strategic plan draft should generally be prepared for consideration early in the fifth year. The framework for SPs and APPs is important in understanding strategic skills as it provides both the guidelines and the processes that must be followed. An understanding of the strategic plans is important for the success of the SETAs (President of the Republic of South Africa, 2010a:7). This is discussed below.

2.6.2 Strategic Plans and Objectives

The Strategic Plans (SPs) framework dictates that the focus of strategic plans must be on issues that are strategically important, linked to, and flowing from the various plans developed within departments/ institutions to fulfil their specific mandates. The framework requires that an entity's objectives be written as a specific, measurable, attainable, relevant and timely (SMART) performance statement. It also stipulates that the departments/institutions' stated targets be achievable within the period covered in the strategic plan (President of the Republic of South Africa, 2010a). The section below discusses the framework for managing programme performance information.

2.7 Framework for Managing Programme Performance Information

The Constitution of the Republic of South Africa mandates that all government institutions and departments should publish information on administration and performance. The performance information is required for purposes of transparency, oversight and accountability to parliament, to the accounting authority and to provincial legislatures in accordance with Section 195 of the Constitution. An institution is expected to identify a set of programme performance indicators and targets in its APP to track its on-going performance. These programme performance indicators must be reliable, well defined, verifiable, cost-effective, and relevant (PFMA,1999).

Cognisant of the power of information technology, institutions are required to have management processes to collect information that is required to track performance against each indicator. The key performance indicators should be aligned to the national outcomes indicators. The framework for managing programme performance information recommends that institutions should record performance information

against core indicators and that this should be easily accessible to all role-players (President of the Republic of South Africa, 2010a:19).

The government developed a policy framework for a government-wide monitoring and evaluation system. This is discussed in more detail below.

2.7.1 Policy Framework for Government-Wide Monitoring and Evaluation

The policy framework for government-wide monitoring and evaluation recommends a systematic evaluation of programmes and policies, including strategy design and implementation. The aim of the framework is to determine relevancy, efficiency, effectiveness, the impact as well as sustainability of overall government spending priorities, it also assess how public resources have been utilised. The framework requires that plans and budgets be interrelated to enhance operational effectiveness. As part of public entities monitoring, the quarterly performance reports must be submitted to the relevant authorities (President of the Republic of South Africa, 2007a). All SETAs, State Owned Entities and other public entities must develop annual strategic plans. However, a year is too long to take corrective action, this is why quarterly performance reports are required. The quarterly performance reports provide progress updates on an institution's implementation of APP in the previous quarter, with reference to monitoring delivery against the quarterly performance targets (President of the Republic of South Africa, 2007a). Annual reports are discussed below.

2.7.2 Annual Reports

Annual reports provide information on the performance of institutions in the preceding financial year for purposes of oversight. An annual report looks at an institution's performance relative to the targets that were set in the APP. An organisation's audited annual financial statements are also published in the annual report. It reveals how the budget was utilised and the state of the institution's financial records. The annual report should include relevant background statistics and the administrative data series (President of the Republic of South Africa, 2007a:19). Public entity leadership should be held accountable through performance contracts. Performance agreements are explored in the section below.

2.7.3 Performance Agreements

The framework recommends that performance agreements be in place for the accounting officer and other organisational officials, additionally, that these be signed within a reasonable period of time as agreed with the reporting authority. It is recommended that performance agreements be linked to the achievement of the strategic plan, the implementation of the APP and the annual budget. It is further suggested that these contracts include an incentive and reward system.

At the end of a strategy, it is important that an assessment be made on how far an organisation would have achieved this objective. Post implementation assessment helps organisations to learn from the recently ended project (President of the Republic of South Africa, 2007a). This will be discussed in the section below.

2.7.4 End-of-Term Reviews

An institution should produce an end-of-term review towards the end of the period that was covered by its strategic plan. The report should state the extent to which the institution would have succeeded in achieving each of the strategic outcome-oriented goals and objectives that were set at the beginning of the five-year period, as well as on any other evaluations that were conducted during the same period (President of the Republic of South Africa, 2010a). The section below introduces strategic management.

2.8 Strategic Management

According to Barbosa, Castaneda-Ayarza and Ferreira (2020), strategic management is expected to enable an organisation to effectively manage and optimise limited resources in an effort to create a competitive advantage that leads to current and future strategic sustainability. Resources, be it physical or human, are limited and organisations must apply strategic management with regards to resource allocation to ensure delivery. The strategic management process is made up of three main components which are; strategic planning, strategic implementation, as well as strategic monitoring and evaluation (Huy & Zott, 2019). Though the study did not cover strategic monitoring and evaluation, the researcher deemed it important to demonstrate the inter-connectivity of these three strategic elements through the Thompson's strategic management framework. This strategic management

framework was found to be relevant to this study as it is holistic and generic, hence it can be applicable to the chemical industry and its stakeholders.

Figure 2.1: Strategic Management Framework

(Source: Thompson, Scott & Martin 2019)

The planning stage covers situation assessment, clarification of objectives, corporate strategy, competitive strategies and strategic decisions. This is followed by strategic implementation and finally, by monitoring and evaluation.

The monitoring and evaluation process is a single activity that is followed by situation appraisal. At this stage, the process starts again.

Strategy may be classified into one of two categories, either deliberate or emergent. Organisations formulate strategies due to external pressures “deliberate strategy” (Hernandez-Betancur, Montoya-Restrepo & Montoya-Restrepo, 2017).

However, new patterns usually develop, thereby resulting in a change of the originally planned strategy, thus giving rise to an emergent strategy (Hernandez-Betancur, Restrepo & Restrepo, 2017).

An organisation's final strategy is shaped by one of three elements, which are either context, content, or process. Strategic management affects and is also affected by an organisation's internal and external factors (Bryson, Edwards & Slyke, 2018; World Health Organisation , 2021). Ultimately, strategic outcome is affected by addressing any one or a combination of these elements (Cirjevskis, 2019). It is important that a strategic skills practitioner understands the context in which an organisation operates. The context is divided into two, that is, the inner and the outer (Leeman, Birken, Powel, Rohweder & Shea, 2017; Lengnick-Hall, Willging, Hurlburt, Fenwick & Aarons, 2020). An organisation has limited control over the outer context which includes factors such as but not limited to social, economic and competitive conditions (Weiser, Jarzabkowski & Laamanen, 2020). Unlike the outer context, the inner context covers aspects over which an organisation has some considerable control over. The inner context includes factors such as corporate culture, structure and organisational policies (Moullin, Dickson, Stadnick, Rabin & Aarons, 2019).

The content element consists of the strategic options an organisation aims to pursue to achieve its planned objectives, improved reaction to content forces leads to a better alignment of an organisation's resources and planned strategy (Hareebin, Aujirapongpan & Siengthai , 2018). The process element answers the how of strategy, thereby covering management of activities, actions as well as the methods that are related to strategy formulation and implementation (Burgelman, Floyd, Laamanen, Mantere, Vaara & Whittington, 2017).

The strategic formation process comprises of both the formulation and the implementation of organisational strategy, and hence encompass the actors, the activities and the structures as well as their impact on the strategic skills outcomes (Lavarda, Scussel & Schafer, 2020). Strategic skills plan formulation is discussed below.

2.8.1 Strategic Skills Plan Formulation

Strategic skills denote those skills that will lead to the CHIETA achieving its conceptualised vision and mission thereby benefiting its strategic skills stakeholders (Machado, Winroth, Carlsson, Almström, Centerholt & Hallin, 2019).

The strategic skills plan formulation process consists of several activities, including the development of a mission and vision statement, the setting of goals and objectives as well as choosing the relevant strategic alternatives (Musandiwa, 2019). The reformulation of strategy, which is a consequence of emergent strategy (Chebo & Kute, 2019; Hernandez-Betancur, Montoya-Restrepo & Montoya-Restrepo, 2019), is part of strategic skills formulation.

Freire (2017) opines that the objective of the strategic skills formulation process is to support the collective construction of the necessary knowledge from strategic stakeholders through strategic dialogue. It is anticipated that these strategic dialogues will transform collective intelligence into institutional intelligence for the benefit of the different stakeholders in the skills ecosystem. Skills strategy as practice is discussed below.

2.8.2 Skills Strategy as Practice

Skills strategy as practice refers both to the situated doings of the practitioner and to the different socially defined practices individuals draw from performing their skills work (Knight, Daymond & Paroutis, 2020). The practice perspective focuses on the practical competence of the practitioners as skills strategists as opposed to taking an organisational perspective (Qehaja & Kutllovci, 2020). Additionally, skills strategy as practice explores and identifies important links between an organisation's macro and micro-environments, furthermore, analysing the actions and the interactions thereof (Lavarda, Scussel & Schäfer, 2020; Maritz & du Toit, 2018).

Skills strategy as practice seeks to answer the following critical questions; How and where is skills strategic work actually done? Who and how do they get to do it? What is the required skills set and how are these skills acquired? What are the required tools and techniques? Additionally, how is strategising and organising communicated and delivered in the organisation? (Neto & Borges, 2019). The uniqueness of strategy as practice is that it captures and acknowledges the practitioners' views and

interpretations of organisational activities and of doing strategy (Andersson , 2020). The next section discusses strategic initiatives.

2.8.2.1 Strategic Initiatives

Cooke-Davies (2017) describes a strategic initiative as a complex and comprehensive plan that brings together cross-functional teams for the purpose of gaining competitive edge through launching new, differentiated or improved products or service enhancement, or reengineering business processes. Strategic initiatives can either be organic or radical. Whereas radical initiatives imply a redefinition of strategic positioning and the reconfiguration of the value chain, organic initiatives on the other hand, are gradual (Tiberius, Schwarzer & Roig-Dobon, 2021). The following section discusses strategy and organisational performance.

2.8.2.2 Strategy and Organisational Performance

Nani and Safitri (2021) describe organisational performance as the ability to acquire and mobilise scarce resources in pursuit of achieving an organisation's operational goals. Organisational performance is not absolute, in that there is a trade-off between long-term and short-term gains. According to Nazarian, Atkinson and Foroudi (2017) performance can be measured from a number of perspectives which could be; growth as measured by either revenue increase, profitability or an organisation's industry share. In this study, growth is defined in terms of all the three elements referred to above.

Whereas Samada, Alghafisa and Al-Zuman (2018) argue that there is a clear correlation between strategic planning and organisational success; some results on this relationship have been inconclusive (Omotayo, Michael & Andre, 2018; Mistura & Bolaji, 2020; Alosani, Yusoff & Al-Dhaafri, 2019). Despite these contradictory and inconclusive findings, some scholars justify strategic planning as it; helps organisations in the clarification of their future direction, identification of priorities, development of a coherent basis for decision-making as well as achieving sustainability (Tom & Laurie, 2020; Mburung'a, Awino, Ogollah & Pokhariya, 2019; Manning, 2020).

Justifying the need for strategic skills planning, Nafiu, Yalo and Saliu (2019) reason that, if well managed, it will lead to improved performance through responding to the

dynamic business environment. This is supported by Khan, Thitivesa, Siraphatthada and Phumdara, (2020) who reason that organisational performance is a combination of employees' involvement and their understanding of strategic skills planning.

According to Mishra and Kumar, (2019), there are three strategic factors that have been identified as critical to organisational performance; strategic skills planning comprehensiveness, which refers to the extent to which organisations are inclusive in making and integrating strategic skills decisions. High organisational breadth and depth of involvement which is defined as the opportunity to gain knowledge from the different business units, project teams and from the diverse stakeholders of an organisation whereas. On the other hand, depth of involvement relates to the inclusion of all the individuals who are involved in strategic skills planning throughout and across an organisation (Ismail & Zhao, 2017).

The stakeholder strategic planning framework is discussed below.

2.9 Strategic skills relevant frameworks

2.9.1 Stakeholder Strategic Planning Framework

A stakeholder strategic planning framework is suitable where there are a number of different interest groups sharing a common goal or objective (Silvius & Schipper, 2019). A stakeholder is defined as any individual or group of people who have the potential to affect or be affected by the achievement or non-achievement of an organisation's objectives (Gregory, Atkins, Midgley, & Hodgson, 2020). Effective stakeholder engagement demands the inclusion of all individuals involved in the strategic decision-making process (Gregory, Atkins, Midgley & Hodgson, 2019: Dmytriyev, Freeman & Horisch, 2021). Inclusivity is key to the stakeholder framework as it provides a sense of ownership, shared vision and understanding, fairness as well as commitment and has the potential to reduce the likelihood of alienation and conflict amongst the different stakeholders (Harris, 2020).

The success of a stakeholder management relationship requires a critical and comprehensive evaluation and analysis of key stakeholder attributes such as power, legitimacy and urgency (Węgrzyn, & Wojewnik-Filipkowska, 2022). There is some empirical evidence suggesting that enlightened strategic skills planning is best informed by a process of stakeholder engagement (Day, Blumber, Vu, Zhao, Rennie

& Tucker, 2018). Effective stakeholder relationships require open communication covering the entire strategic skills management life cycle from formulation, execution and feedback (Barrane, Ndubisi, Kamble, Karuranga & Poulin, 2021).

Strategic skills, as demanded by industry, are dynamic in nature, this is caused by the consumers' ever-changing demands. The dynamic capabilities theoretical framework is covered in the next section.

2.9.2 Dynamic Capabilities Framework

The dynamic capabilities framework explains how an organisation's competitive advantage is determined by the continuous exploitation of its created asset positions (Bogers, Chesbrough, Heaton & Teece, 2019). These dynamic capabilities are dependent on an organisation's capacity to repeatedly renew its competencies so as to maintain congruence with a changing business environment (Abosede, Fayose & Eze, 2018). This view is shared by Fitriati, Purwana and Buchdadi (2019) who reason that the term "capabilities" emphasises the key role of strategic skills management in adapting, integrating and reconfiguration of an organisation's internal and external skills, resources and competencies in response to a changing environment.

Reconfiguration is important in skills development as skills requirements are continuously re-defined by both the consumer and the competition. This framework proposes that managers should not create permanent solutions, but rather continually re-configure and develop capabilities to remain relevant (Albort-Moranta, Leal-Rodríguez, Fernández-Rodríguez & Ariza-Montes, 2018). The section below introduces an international context on strategic skills planning.

2.10 Strategic Skills Planning an International Context

2.10.1 Strategic Skills Development in Germany

The German vocational training system, with its alternating combination of learning and working, is recognised worldwide as a simple but effective model for vocational training (Benassi & Durassi, 2021). A key unique characteristic of the German vocational training system is that all program interactions between private companies and the public vocational schools is legislated. The German vocational training system rests on three basic pillars, namely the individual, the social and the economic aspects (Achatz, Jahn & Schels, 2020). The individual dimension refers to the role of the system to develop skills that are required by the individual learner, whereas the social aspect refers to training as a means of promoting the social integration of the learner both in the workplace and in the society at large. The economic dimension refers to training that ensures a high level of business, economic and individual productivity (Bennasi & Durassi, 2021).

There are three factors that can be credited with the success of the German skills development program; its recognition and acknowledgement of labour and business as the most important interest groups in the skills matrix and the involvement of these stakeholders in policymaking (Haasler, 2020). Additionally, each of the three spheres, that is, the government, labour and business, has clearly defined roles and responsibilities (Bennasi & Durassi, 2021). These roles are stated as follows; employers have a decisive role in all Vocational Education and Training (VET) activities (Vestergaard & Norgaard, 2018), additionally, they provide learning opportunities and the necessary practical experience to build portable occupational competencies. Finally, employer associations develop and revise curricula with skills development providers and industrial experts (Achatz, Jahn & Schels, 2020). The role of labour is to guarantee fairness and transparency of processes followed. The section below describes skills development in Singapore.

2.10.2 Strategic Skills Development in Singapore

The Singapore skills system is run by the government in collaboration with the private sector. The Singapore skills model was of interest to the researcher as it was a success as evidenced by its strategic skills model contributing to the rise of the

Singapore economy as one of the seven Asian tigers (Oleksiyenko, Chan, Kim, Lo & Manning, 2021). There are several key actors and institutions in the Singapore skills eco-system. The key actor is the Ministry of Trade and Industry which is responsible for broad economic development policies (McNulty & Kaveri, 2019).

The Singapore skills development system is characterised by five key features. These are; a strong coupling between the economic development strategies and the skills development policies, technology transfer and skills development funding. The last two features are; long-term skills development through the reform of education policy and the establishment of clear lines of communication and a structure of interaction among the different stakeholders. The Singapore technology transfer model incentivises foreign investors to establish training centres in collaboration with the state. Some of the incentives provided include but are not limited to land, tax relief and, in some cases, preferable market access (Pan, Chen & Zhan, 2020).

The skills development funding model obligated employers to contribute . 25% of the gross salary of all employees earning less than $800 per month (minimum of $2) and a maximum of $11.25 for those earning more than $4,500.00 per month to the skills development fund. Employer can get between 50% and 70% credit on training costs depending on factors which include age, citizenship and company size. The training grants are structured to provide training for skills that are in demand. The system is designed in such a way as to award larger grants to organisations with training plans covering more than 50% of the workforce. Though the system rewards skills development, it also penalises companies that continue to use low skilled workers in low-cost operations (Pan, Chen & Zhan, 2020).

Another key characteristic of this model is the continuous reform of the Singapore education policy to meet Singapore's human resource needs. To this end, the government introduced changes that are aimed at improving the quality of education (Kwek, Teng, Lee & Chan, 2021). Stakeholder roles are clearly defined thereby avoiding confusion (Pan, Chen & Zhan, 2020). The tripartite nature of Singapore's strategic skills model, where management, labour and government representatives sit on the boards of public institutions partaking in skills development, provides for the development of in demand and relevant skills programs (Tarat & Sindecharak, 2020). The combination of the involvement of all stakeholders and the policies included in the

system, together with the feedback loops built into the process, yield a national and coordinated effort that improves workforce skills (Dreier, Nabarro & Nelson, 2019). The next section discusses skills development from an African context.

2.11 Strategic Skills Planning: an African context

The socio-cultural and economic context in African countries needs to be considered when dealing with strategic skills planning and implementation on the continent (Irwin, 2020). A generalisation of African research findings and the lack of understanding of the diversity of African contexts and cultures present problems when it comes to finding solutions to African skills challenges (Hack-Polay, Igwe & Madichie, 2020). According to Marcus, Vijay and Andrea (2016), there is an abundance of published and unpublished literature on skills development in South Africa, but there is little theoretical knowledge about skills planning and the science related thereto in the rest of Africa. Elsewhere in Africa, specifically in Kenya, strategic skills planning has gained prominence (Nyanaro & Bett, 2018).

In a study on strategic skills in Nigeria, Oviawe, Uwameiye and Uddin (2017) point to the need for strong collaboration among different strategic skills stakeholders to break barriers caused by the lack of support from industries and furthermore, to narrow the gap between Technical and Vocational Education and Training (TVET) offerings and the world of work. In another study conducted in Nigeria, Nwajiuba and Akinsola- Obatolu, 2020) identified a wide gap between skills demanded and the quality of VET output. There is need for skills programs to be designed and developed in consultation and in partnership with the private sector to ensure both quality and industry relevancy (Tessema & Abejehu, 2017).

Whilst findings in Kenya confirmed that training, significantly increased the probability of both formal and informal employment, in Rwanda, technical vocational education appeared to increase earnings in the informal sector whilst findings in Ghana were inconclusive (World Bank, 2013). Findings from another research in the Southern African Development Community showed that skills development had a positive effect on the Gross Domestic Product “GDP” (Phale, Adjei Mensah, Omari-Sasu & Musah, 2021).

The uniqueness of strategic skills demand in the following African states was demonstrated in that, whilst the technical and entrepreneurial skills of the majority of young people in Zimbabwe were informal, the rate in Ghana was between 85% and 90% and in Morocco the rate was lower at 80.3% (Afeti & Adubra, 2014). These findings demand a paradigm shift in strategic skills planning and in this case, demonstrate that strategic skills offerings should be demand and not supplier driven (Medayeidun, Shodipe & Aderoju 2017). An example is the successful Tanzania's skills development project, this is through a Public–Private Partnership (PPP) initiative bridging the gap between class learning and industry requirements (Andreoni, 2018). The following section discusses strategic skills in South Africa and contrasts this to the German and the Singapore models.

2.12 Contrasting Skills Development in South Africa

In Singapore, the government developed a Workforce Skills Qualifications (WSQs) system that caters for all training requirements. The scheme allows for organisations to deduct up to 100% of training costs for high-skilled jobs. The advantage of this system is that it is unlikely to fund inefficient training as opposed to a levy scheme (Wibrow & Waugh, 2020). In South Africa, there is no incentive to focus on high level skills. The Singapore skills model runs a separate scheme known as the Enterprise Training Support (ETS) which was developed with very specific objectives. The three objectives of ETS are: to raise employees' productivity and skills levels; to attract and retain valued employees by developing good Human Resource (HR) and management systems and practices that are tied to sound training and finally, to attract and retain valued employees by benchmarking compensation and benefits. The ETS makes skills development relevant to workplace performance. It also links skills acquisition and utilisation to retention and ultimately, skills development leads to improved firm performance (ILO, 2017). There are five grant components in the ETS. The first one is the training grant. As a condition for the grant, a training plan is mandatory. The formalisation of skills training makes it more strategically positioned. The system covers the cost of both structured WSQs and non-WSQ training.

The second component is the training capability grant. This grant enables an organisation to build in-house capability in terms of training delivery or infrastructure. The third component is the curriculum contextualisation and alignment grant. This

allows for publicly provided training to be adapted to the specific needs of a workplace. The fourth component is the HR development grant. This grant is intended to strengthen an organisation's human resource system so that skills can be integrated into the wider structure of the business. The fifth component is the compensation and benefits system review grant. This grant helps to defray costs of engaging consultancy agencies to conduct enterprise-wide industry salary benchmark reviews and to establish an appropriate wage structure to support the organisation (ILO, 2017).

A fundamental element of the Singapore skills system is that improved performance is guaranteed in all the training programmes. The creation of links between skills development and firm performance brings relevancy to the training programmes. This is not the case in South Africa as there are programs that do not add value to learners or to employer organisations. Additionally, in South Africa, there are no systems that measure pre-and post-training job performance, neither is staff retention part of the skills model. South Africa has the equivalent of the first grant (training grant) and in as much as there is no grant labelled as training capability grants, the areas funded are similar. Curriculum contextualisation and alignment grants are not offered in South Africa, primarily because all SETA training must be accredited. This is a drawback to skills development because some skills requirements are company specific. The fourth and the fifth grants are offered under the training grants. Strategic skills planning is not without challenges. This is discussed below.

2.13 Challenges in Strategic Skills Planning

Pereira, Durao and Santos (2019) posit that ineffective information communication and authoritative leadership styles are impediments to strategic skills planning. To this, Tasgit and Ergun (2017) add organisational culture, employee exclusion from strategic skills planning and failure to integrate strategic skills planning with organisational operations. Other factors include pressures to address current work at the expense of long-term planning, a lack of quantitative measures and indicators as well as incongruence between vision and strategy (Javaheri, Abdolvand & Mohammadloo, 2018). The following section discusses strategic skills planning critics.

2.14 Strategic Skills Planning Critics

Strategic skills planning has been criticised for preparing future plans based on historical actions, concepts and tools. Whilst acknowledging the inertia that is brought about by strategic planning, Panic (2020) acknowledges some positives that it brings to organisations. George, Walker and Monster,(2019) made similar findings. Collaborations are the subject in the following section.

2.15 Collaborations in Strategic Skills Development

Melkamu, Woldemariam and Haftu (2020) define strategic skills collaboration as a mindset, and as a way of thinking and active participation between independent organisations and or individuals. Collaborations lead to the development of improved and relevant quality skills qualifications and trades (Sudarman, 2019). Woldesenbet (2020) reasons that the multiplicity of stakeholders involved in strategic skills planning brings with it the need for advocacy. In strategic skills planning, it is important that stakeholders should not be constrained by overall organisational assumptions (Koseoglua, Altinb, Chanc & Aladag, 2020). There is need to appreciate the power dynamics in collaborations as failure to address these power differentials may create situations in which people with knowledge but no power are unheard (Halpern & O'Rourke, 2020). Given the complexity of strategic skills planning, the CHIETA and the stakeholder company representatives are best advised to identify and analyse organisational internal and external enablers to achieve identified and shared goals (Gaspar, Popescu, Dragomir & Unguras, 2018).

Ylitoramanen, Kvist and Turunen, (2019) reason that, collaborative strategic skills planning should be amongst informed and knowledgeable stakeholders on strategic skills. Some of the identified factors for successful collaborations are; a clear and articulated vision of success, a clear and structured multi-communication channel, a conflict resolution mechanism, the inclusion of the right stakeholders and usage of tools that encourage mutual learning (Seaton, Holm, Bottorff, Jones-Bricker, Errey, Caperchione, Lamont, Johnson & Healy, 2018). This is echoed by Ly, Sibbald, Verma and Rocker (2018), as well as by (Yoon, Lee, Yoon & Toulan, 2017). The strategic skills relationship is unique in that it involves labour, employers and government. This is discussed below.

2.15.1 Government, Labour and Industry Relationship in Skills Development

A strong partnership between government, industry and workers is critical for an effective and lasting bond between the world of learning and the world of work (OECD, ILO, 2021). Critical to this relationship is dialogue and bargaining. Some of the positive outcomes of such dialogue and bargaining are the creation of a broad commitment to education and training, the reforming of training systems, instilling a learning culture and the laying of a foundation for the continuous exchange of information between workers, employers and governments (Arnhold & Bassett, 2021). In this relationship, role clarity was found to be key, the corporates' role is to participate actively in industry- led skills development programmes and the role of government is to support initiatives (Ly, Sibbald, Verma & Rocker, 2018). Strategic skills planning without implementation does not change the strategic skills status in organisations, change is brought through strategic skills implementation. This is discussed below.

2.16 Strategic Skills Implementation

A strategic skills plan is meaningless until it is implemented (Enwereji & Uwizeyimana , 2019). Empirical research confirms that most strategic plans fail due to poor implementation (Alharthy, Rashid, Pagliari & Khan, 2017; Eresia-Eke & Soriakumar, 2021). One of the reasons for such a high failure rate is the disconnect between strategic planning and implementation, hence the need for strategic skills practitioners to understand that strategy formulation and implementation are intrinsically interdependent (Al-Dhaafri & Alosani, 2020). It is estimated that the average rate of disconnect in companies between strategic skills formulation and strategic skills implementation among employees ranges between 50-90% (Radomska & Kozyra, 2020). According to Osborne and Hammoud, (2017) employee engagement is critical to the success of organisational strategy implementation.

Strategic skills implementation is divided into two main streams, namely factor and process oriented. The factor stream relates to strategic elements like vision, mission, objectives, strategy, approach and tactics, leadership, change management and organisational culture (Tabesh, Mousavidin & Hasani, 2019: Ferreira, Neto & Batista, 2019). On the other hand, the process-oriented stream refers to the way in which the strategic elements are implemented. The process commences with goal setting, analysis, strategy formation, resourcing, communication , implementation and strategy

monitoring, leadership, organisational culture, problem-solving skills, financial capabilities, performance measurement, change management and education (Sacramento, 2018; Lyon, Cook, Brown, Locke, Davis, Ehrhart & Aarons, 2018).

In strategic skills implementation, it is critical that the right strategic performance indicators and linkages be identified (Tamas, 2020). These indicators should then be continuously managed and monitored (Elton & Drescher, 2019). According to Dewi, Respati and Sanvenia, (2020) the key strategic skills implementation success factors are; uniqueness, creativity, precision, process simplicity and clear communication. To these, Mubarak and Yusoff, (2019) ; Wołczek, (2019) add planning and crafting implementation strategy, overseeing and commitment to implementation, information sharing and effective organisational communication. According to Khan, Wood, Tarba, Rao-Nicholson and He, (2018) a winning culture is the most critical factor. It is important that strategic skills implementers pay attention to emergent strategy because reality differs from the original strategic plan (Thompson, 2019). Maximum cooperation across all the different organisational business units is crucial (Fu, Hsieh & Wang, 2018). The next section discusses the McKinsey 7S strategy implementation framework.

2.16.1 Strategy Implementation: The McKinsey 7S framework

The importance of this theoretical framework lies in its simplicity as well as in its appreciation of the key elements essential to strategic implementation success. This is a generic model which can be used in the chemical sector without any modifications. The framework is based on seven variables. These as shown in Figure 2.5; are structure, strategy, skills, style, systems, staff and shared values (Demir & Kocaoglu, 2019). Structure refers to the specific organisational chart, while strategy is defined as the plan or course of action in allocating resources to achieve identified goals over time. Systems refer to the routine processes and the procedures that are practised within the organisation. Staff are defined in terms of the personnel categories within the entire organisation and not as individuals (e.g., an accountant or statistician). Skills refer to the skills set of the staff complement, while style refers to the way in which key managers behave in achieving organisational goals, it covers the cultural style of the organisation (Jharotia, 2019). Shared values refer to the guiding concepts that are shared by organisational members (Putra, Syah, Pusaka & Indradewa, 2019).

Figure 2.2 illustrates the interdependency of the different variables in the McKinsey 7S framework of strategy implementation.

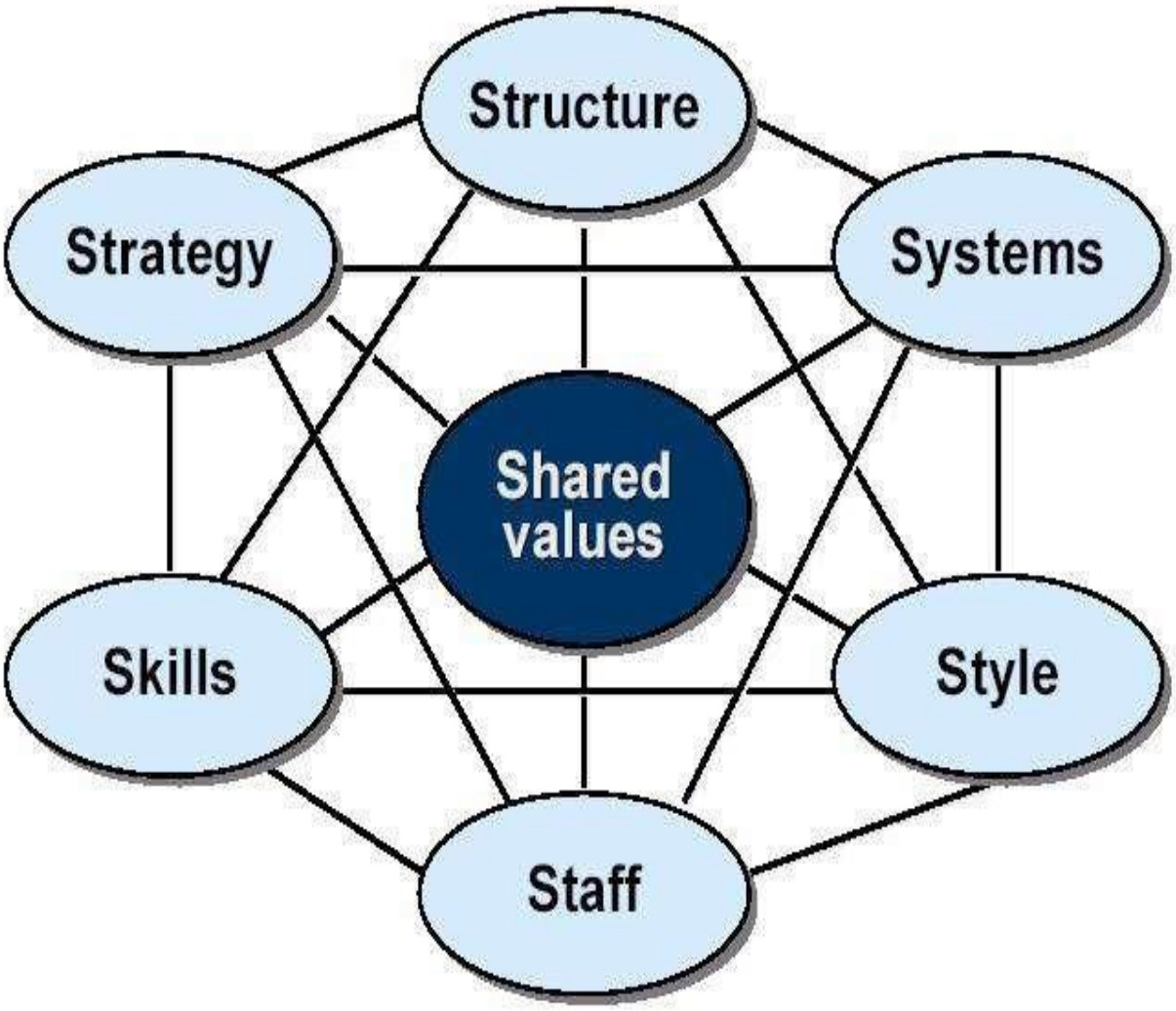

Figure 2.2: McKinsey 7S Framework

(Source: Demir & Kocaoglu, 2019)

2.17 Strategic skills and innovation

Innovation is a process that results in new products or services, it brings usefulness or success to an organisation (Granstranda & Holgersson, 2020) . It is action driven and adds value to the customer and organisational knowledge (Moser, de Oliveira Ricardo & Bueno, 2019; Grimsdottir & Edvardsson, 2018). Innovation is complicated by the involvement of different actors (companies, research institutions, political actors and consumers) as well as the linkages and the cross-fertilisation of knowledge within

and outside an organisation (Pyka, 2017). Innovation ability has a significant effect on product quality and operational performance (Farida & Setiawan, 2022). Below is a presentation of the global innovation index. The table presents the ranking of the world's top ten countries in innovation. It also presents a comparison of South Africa to its BRICS peers. Countries bordering South Africa have been added and so is Mauritius, its inclusion is because it is the top country from the African continent. Of the BRICS block, China is the highest whilst South Africa is last. In comparison to its neighbours, South Africa is unassailable.

Table 2.1: Selected countries: Global Innovation Index 2022

GTI RANK	ECONOMY
1	Switzerland
2	United States
3	Sweden
4	United Kingdom
5	Netherlands
6	Republic of Korea
7	Singapore
8	Germany
9	Finland
10	Denmark
11	China
40	India
45	Mauritius
47	Russia
54	Brazil
61	South Africa
86	Botswana
96	Namibia
107	Zimbabwe

(Source: Adapted: Global Innovation Index Database, WIPO, 2022)

2.18 Summary of the Chapter

This chapter presented and explained strategic skills development by covering strategic skills planning and strategic skills implementation. Strategic skills planning and implementation theoretical frameworks were presented and reasons provided for their introduction. Strategic skills planning was covered from an international as well as an African context. Collaborations and innovation in strategic skills development were also discussed. Additionally, the chapter presented a comparative analysis of

strategic skills models in selected countries with those of South Africa and it concluded with strategic skills implementation challenges.

2.19 Conclusion

Whilst the study confirms the availability of an abundance of literature on strategic skills in North America, Asia and Europe it also demonstrated the scarcity of such literature in South Africa and on the rest of the continent. The outlined context demonstrates that despite the huge sums that have been invested and a myriad of government and companies' efforts in terms of strategic skills development, South Africa has not achieved much. A review of the literature appears to point to a disjuncture between the skills offered by the CHIETA and those that are required by the chemical sector. There also appear to be confusion on the roles of government and industry in strategic skills development, which appear to be counter to the achievement of the intended goals. South Africa continues to stifle skills development through unintended, yet restrictive government policies, whose characteristics include inefficient labour markets and arduous bureaucratic red tape. Having reviewed literature, this study posits that there is a distinction between skills development and strategic skills development. The former being a blind offering of skills that the SETAs deem to be necessary for the industry, whereas the latter refers to an offering of industry required skills, which are developed collaboratively with all stakeholders in the sector. Acknowledging this difference reveals a gap in the manner in which strategic skills development is both planned and implemented in South Africa. A shift in mindset is required if the country is to reduce unemployment, grow the economy as well as be globally competitive.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

Academic research is based on an underlying philosophy that guides the development of knowledge and an understanding of these philosophical assumptions is important. It is equally important when one is performing a review of research findings, the critical question to be answered would be; if a similar research were to be conducted, would it come to a similar finding?. This chapter discusses these philosophical assumptions together with the design strategies underpinning this study. In addition, the chapter discusses the research methodologies used including the instruments, the data collection and analysis methods applied.

For the quantitative method, questionnaires were used to evaluate the participants' knowledge and understanding of the variables in the research. Quantitative data was collected through survey monkey, hand delivery and through direct email questionnaires. For qualitative data collection, a combination of face-to-face and telephonic interviews were conducted. Whilst data was collected using an interview schedule.

Justification for each of the data collection methods used in the study will be discussed. The sampling methods applied as well as the sample sizes are stated, including the justification for their selection. The data analysis protocol is provided and issues of validity and reliability are adequately dealt with. The chapter highlights the delimitations, the limitations and the ethical considerations of the study. Research design is discussed next.

3.2 Research design

A research design is the science and art of planning procedures for conducting studies with the aim of obtaining valid findings and as a plan for relating conceptual research problems to relevant and practicable empirical research (Tobi & Kampen, 2018:1211). According to Asenahabi, (2019) , a researcher must select one of the approaches that

exist in either a qualitative or quantitative inquiry. For purposes of this study, the researcher utilised both the qualitative and the quantitative inquiries. Additionally, the researcher sought to investigate how the CHIETA and its chemical industry stakeholders both plan and implement strategic skills in the sector. Consequently, a pragmatic approach was considered to be the most appropriate as it is problem- centred, pluralistic and is real-world practice-oriented (van Dijk, 2019). The pragmatist view posits that truth is not a product of social reality but rather it is a practical concern brought by a desire to advance scientific discovery (Kaushik & Walsh, 2019). In justifying pragmatism, Kelly and Cordeiro (2020) reason that the approach helps in understanding and connecting with social reality.

The case study is analysed through a mixed methodology (Dabengwa, Raju & Matingwina, 2020). Since this was a mixed methods study, it involved both quantitative and qualitative approaches. A quantitative research approach is usually associated with positivism, thereby positing that the social world exists externally and that its properties can be measured objectively (Kivunya & Kuyini, 2017). It is the researcher's view that the impact of a strategic skills plan and its implementation can be measured objectively. The quantitative approach in this study helped the researcher to establish the statistical evidence on the strength of the relationships between the variables that were identified in the study (Zyphur & Pierides, 2020). In addition to the quantitative approach, the researcher applied the qualitative approach.

Qualitative research works with the universe of meanings, motives and attitudes, which correspond to seeking a deeper understanding of relationships, processes and phenomena in a given environment (Queiros, Faria & Almeida, 2017). This study sought to examine how strategic skills planning, strategic skills innovation, strategic skills collaborations and strategic skills implementation are practiced within the CHIETA and its stakeholder organisations. The human actors in this research were the strategic skills planning and implementation practitioners within the CHIETA and its stakeholder eco-system. A qualitative research approach provides data about real- life people and situations (Aspers & Corte, 2019; Kalu & Bwalya, 2017).

Research methodology is discussed next.

3.3 Research methodology

Despite philosophical ideas being hidden in research, they still affect the practice of how research is conducted (Ganesha & Aithal, 2022). It therefore follows that a philosophical review of methodology helps to explain why a certain research approach was applied. A research methodology is the rules for communication of scientific reports (Haradhan, 2018; Dzwigol & Dzwigol-Barosz, 2018). An all-encompassing definition is provided by Newman and Gough (2020), who describe a research methodology as providing the research purpose, activities, procedures, measurements and applications.

It is important to explain the philosophical underpinnings of research, and this includes a clarification of the kind of evidence that is required, the methods of data collection and the interpretation most suitable for the specific research enquiry as well as the choice of the research design that is appropriate for the social phenomenon (Agustino, 2018). For the credibility of this study, it is also important that the researcher clearly articulates the philosophical underpinning of this research. The next subsections explain how both the quantitative and the qualitative approaches were used in this study.

3.3.1 Quantitative approach

A quantitative research approach is based on the ontological assumption that the social world exists externally and that its properties can be measured objectively (Gunbayi, 2020). It is the researcher's view that the impact of a strategic skills plan and its implementation can be measured objectively. Furthermore, Mohajan (2020) contends that a quantitative approach depicts the objective and the substance of a given social reality. According to Dawadi, Shrestha & Giri, (2021) a quantitative approach establishes and validates relationships among variables, and assists in developing generalisations that contribute to theory, this is echoed by (Rucha, 2020; Zyphur & Pierides, 2020; Hutcheon & Liauw, 2023; Maarouf, 2019). The quantitative approach in this study helped the researcher to establish the statistical evidence on the strength of the causal relationships between the variables identified in the study.

The researcher's objective was to obtain the respondents' views without influencing or controlling them (Sulieman, Ricciardi, Celsi, Zomaya & Villari, 2022) .

There is wide acceptance of the survey method for data collection in management literature (Fletcher & Bostock, 2020). Based on the above reasons, survey research was deemed suitable. Skinner, Vento, Johnston and Wardenaar (2022) opine that the questionnaire needs to be simplified with clear instructions, and such instructions should be provided beforehand. As a data collection instrument, the researcher used questionnaires as they are quick, inexpensive and efficient to process (Desai & Reimers, 2019). The approach to a qualitative study is discussed next.

3.3.2 Qualitative approach

A qualitative study is best where an alternative perspective may be proposed (Cribb, Entwistle & Mitchell, 2023; Busetto, Wick, & Gumbinger, 2020), and also in cases where possible problems in processes may be identified (Busetto, Wick & Gumbinger, (2020). This research approach provides data about real-life people and situations (Aspers & Corte, 2019; Kalu & Bwalya, 2017). Qualitative research works with the universe of meanings, motives and attitudes, which correspond to seeking a deeper understanding of the relationships, the processes and the phenomena in a given environment (Queiros, Faria & Almeida, 2017). This study sought to examine how the following phenomena; strategic skills planning, strategic skills innovation, strategic skills collaborations and strategic skills implementation are practiced within the CHIETA and its stakeholder organisations (Moser & Korstjens, 2018). The researcher is of the persuasion that there is a real possibility of a recommendation for alternatives in either one, some or all of these examined areas (Doyle, McCabe, Keogh, Brady & McCann, 2020). The assumption of a qualitative or phenomenological approach is that the world is socially constructed, and it can only be understood by examining the perceptions of its human actors (Nigar, 2020; Ozuem, Ranfagni, Willis, Rovai & Howell, 2021).

This research was conducted through a case study. Rashid, Rashid, Warraich, Sabir and Waseem (2019) describe a case study as an extensive examination of a single instance of a phenomenon of interest. The phenomenon under study was strategic skills (Korstjens & Moser, 2017). According to Mohajan (2018), the following is the structure of a case study; the problem, the issues, the context, and the lessons that have been learnt. A case study presents a particular richness of the detail of processes in a study context (Rashid et al., 2019; Andersen, Dubois & Lind, 2018).

The whole essence of the study was to understand the strategic skills dynamics present within both the CHIETA and its chemical strategic stakeholder companies. This study investigated strategic skills planning, strategic skills innovation, strategic skills collaborations and strategic skills implementation in the chemical sector. For purposes of this study, qualitative data was collected through interviews. A justification for the research methodology used is provided below.

3.3.3 Justification for the selected mixed methodology approach

In this study, a framework was to be developed, it was therefore important to establish reliability and validity and also to ensure generalisability of the findings. According to Mohajan (2020), the quantitative paradigm provides for strong reliability, validity and generalisability. Reliability in this research was calculated and provided a Cronbach's alpha of .966, which is considered excellent, as acceptable minimum is ,70 (Baistaman, Awang, Afthanorhan & Rahim, 2020). Additionally, there was need to identify and measure causal relationships between variables so as to develop an optimum framework , a quantitative method is the best approach for such purpose (Madumal, Miller, Sonenberg & Vetere, 2020).

The researcher also had compelling reasons to apply the qualitative paradigm. Flexibility, theory development and context comprehension require a qualitative paradigm (Berisha, Mustafa & Ismail, 2018; Thompson, Thorne & Sandhu, 2021). Since a CHIETA framework had to be developed there was need for an understanding of the CHIETA to address a specific context and this is provided for under a qualitative method.

In literature reviewed on the topic, the mixed-methods strategy is viewed as being the preferred choice (Harris-Lovett, Lienert & Sedlak, 2018; Watson, Snow-Hill, Saldana, Walden, Staton, Kong & Donenberg, 2020). Additionally, the two-pronged approach was found to be the most appropriate as it ensured that the shortfalls of the quantitative methodology were complemented by the qualitative methodology and vice versa. Furthermore, the mixed methodology allowed for a reconciliation of the areas of agreements and disagreements through the provision of explanations for the numerical variances. Additionally, the sequential approach utilised, where the quantitative approach was utilised followed by the qualitative was to seek explanations

to the questions that remained unanswered in the questionnaire. Additionally, a mixed methods approach strengthens validity through triangulation (Natow, 2020).

The mixed methodology combines methodological rigour with flexibility thereby making the approach pragmatic (Gilbert, Cattell, Edwards & Bowen, 2017). There is more to the application of mixed methods than the application of both the qualitative and the quantitative data collection methods as this allows for integration. This can happen at multiple stages of a study, either at the design-level, the methods-level, or the interpretation level (Berman, 2017). In this study, data was integrated at the design and analysis stages (Palinkas, Mendon & Hamilton, 2019).

In this research, the survey questions and the analysis preceded the qualitative process. The researcher observed the outliers or the conflicting responses to the related quantitative questions. This was the basis upon which the interview schedule was compiled (Woiceshyn & Daellenbach, 2017). The deductive process commences with theory and hypothesis that guides data collection and analysis (Pope & Mays, 2020). This was then followed by the inductive process.

Following the above logic, research needs not necessarily be seen as either qualitative or quantitative as these paradigms complement each other by providing different views on the same factors. In as much as the two methods were utilised, this was not in equal proportions as the quantitative paradigm was predominant. This was precisely because expansive data had to be collected and relationships between the data had to be established as a foundation for the qualitative research. The section below discusses pilot studies in research.

3.4 Pilot study

A pilot study refers to the pretesting of a research instrument for purposes of understanding feedback and identifying any problems in the data-collection process (Fraser, Fahlman, Arscott & Guillot, 2018; Malmqvist, Hellberg, Mollas, Rose, & Shevlin, 2019). A pilot study answers questions, for example; Are the planned methods and procedures relevant? Do they evaluate the likelihood of success of planned participant recruitment? Do they assess the appropriateness of the data collection instruments or methods utilised? (Lowe, 2019).

Pilot studies also assist in determining whether the research instrument provides data of sufficient quality, relevancy and quantity which will satisfy the research objectives (Mwita, 2022; Mohajan, 2017).

The pilot study for the quantitative and the qualitative data was conducted with six people between the periods of March 2018 and October 2019. The sequence was quantitative questionnaire piloting followed by qualitative interview schedule piloting. It is also important to state that the pilot samples were different. The purpose for piloting the questionnaire and interview schedule was to ensure that the questions were clear and would be understood by the participants, as well as to prevent errors and bias in the data collected. The samples were picked from strategic skills practitioners, and it was representative of the strategic skills stakeholder population. Concerns raised on the research tools were addressed before they were sent out. Research population and sampling are discussed next.

3.5 Population and sampling

Naseri, (2021) defines a population as any precisely defined set of people or a collection of items under consideration in a study. Put succinctly, a population is a group of individuals or events that conform to a specific criteria, and to which one intends to generalise research findings (Vonk, 2015; Asiamah, Mensah & Oteng- Abayie, 2017). The population for this study was the CHIETA and its strategic skills stakeholder member companies. The sample was comprised of the CHIETA employees, management, the board, the various member company and union representatives as well as skills development providers in the chemical sector. In qualitative research, there is no consensus on the best sample size, though generally, it is agreed that the sample should be small enough to enable a detailed case-oriented analysis of its quality (Vasileiou, Barnett, Thorpe & Young, 2018). There is a total of 1 058 companies that pay levies to the CHIETA but not all of them are actively participating in skills development. As of March 2022, a total of 750 companies were participating (CHIETA Annual report, 2022). Those considered as the population for purposes of this study are the representatives of these companies that were participating in the different strategic skills forums.

The CHIETA, as stated earlier, has several different forums which include research colloquiums, the Technical Functional Advisory Committee (TFAC) and the regional forums. In this study, purposive and random sampling techniques were applied. Purposive sampling was applied to the CHIETA employees whereas random sampling was applied to the stakeholder sample. Purposive sampling demands that the participants must be chosen for their potential to provide rich and relevant information on a given subject matter. In this research, the knowledge that was required was in strategic skills planning and in strategic skills implementation (Andrade, 2021). The stakeholder respondents were all involved in strategic skills planning or in strategic skills implementation hence the random sampling. As for the CHIETA employees, purposive sampling was applied as not all staff were involved in strategic skills planning or strategic skills implementation. Some of the CHIETA staff were in none- core business units like finance, human resources or supply chain management. It is important in research that the unit of analysis be identified beforehand, and this is discussed below.

3.6 Unit of analysis and case study in research

As stated earlier in Chapter 1, the main aim of this study was to develop a strategic skills planning and implementation framework for the CHIETA. This entails an understanding of the current practices in the identified entity. The unit of analysis of the case study was the CHIETA. As of September 2019, the CHIETA board had 13 members. Within the CHIETA board, there are board sub-committees such as the finance and remunerations committee, the grants and the risk committees. The finance and remunerations committee is responsible for organisational finance including employee and board remuneration, the risk committee which is responsible for governance and risk management, and the grants committee that is responsible for all grants matters.

Internally, the chief executive officer “CEO” is the operational head and is referred to as the accounting officer. There is a team of five other executives, who support the CEO; these are the chief financial officer, the research and skills planning executive, the governance and risk executive, the corporate services executive and the grants and regions executive. The CHIETA has a total staff complement of 75 full-time employees. In addition, the CHIETA appoints interns on two-year contracts and they

average around twenty in any single year. The CHIETA has a physical presence in three provinces across the country though it services eight provinces in total.

The head office and the Gauteng regional offices are located in Midrand, Gauteng province. Then there is the Kwazulu Natal and the Western Cape offices. Figure 3.1 shows the CHIETA's organisational structure. The reason for incorporating the CHIETA's organogram was two-fold, to ascertain the strategic synergies between the organisation's business units and to establish whether the organisation was designed for innovation.

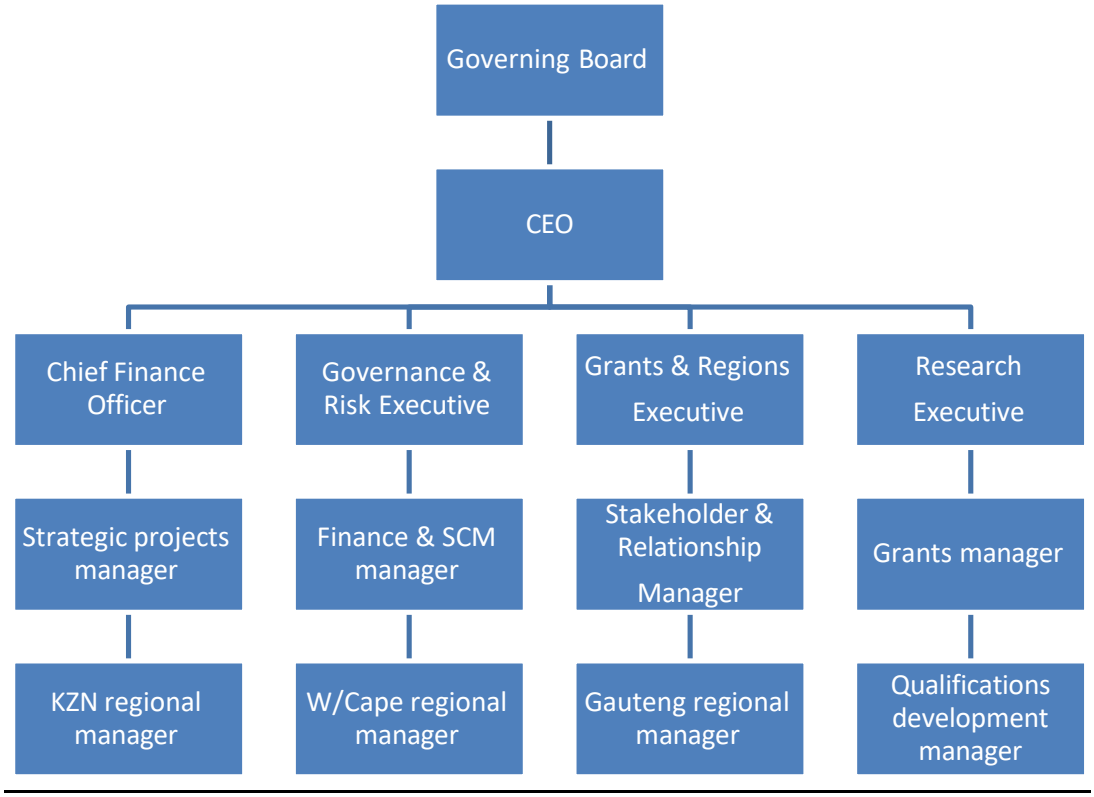

Figure 3.1: McKinsey 7S Framework

(Source: CHIETA Annual Report 2022)

3.7 Data types

There are two research data types, namely primary and secondary data. Primary data refers to the original data that is collected at source, whereas secondary data already exists, for example, in books, in annual reports and in personnel files (Quinn, 2023). Data collection can be done through a single or a mixed methods approach thereby

triangulating the data; this improves the accuracy of the judgments involved (Johnson, O'Hara, Hirst, Weyman, Turner, Mason, Quinn, Shewan & Siriwardena, 2017). Triangulation refers to a combination of methodologies in the study of a phenomenon from both the positivist and the interpretivist epistemologies (Fusch, Fusch & Ness, 2018). Research data were collected using two research instruments namely the questionnaire and the interview schedule.

3.7.1 The questionnaire

The questionnaire had a total of 59 questions, which were divided into five sections (A to E). The development of the questions followed an extensive literature review. The questionnaire was self-developed, and it was designed to address areas of interest identified in the reviewed literature. *Section A* covered biographical data. Though not central to the research, biographical data was necessary for contextualising the study as well as the identification of the geographical spread of the respondents for possible generalisation of the research findings and the recommendations. *Section B* covered the vision and the mission statements as they have an overarching effect on strategy. In the same section, strategic skills planning is also covered. *Section C* covered strategic skills innovation. As already alluded to by the researcher, the strategic skills arena has multiple stakeholders, it was therefore important that collaborations be covered in this study. *Section D* covered collaborations in both strategic planning and implementation. Without collaborations, skills development will invariably fail. *Section E* covered strategic skills implementation. In the strategic skills equation, the greatest challenge and the least understood phenomenon is strategic skills implementation. Brilliant strategic skills plans fail largely because of poor implementation (Twum, 2021). It was therefore important that this be covered in this study and a section was devoted to this phenomenon. The researcher used a five-point Likert scale for the collection of quantitative data. The score descriptors were: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree.

The descriptors were provided to the respondents in the body of the emails as well as through a note highlighted in bright purple on the questionnaire, just before the first question. This was to ensure that the respondents understood what the numbers on the scale represented. A five-point scale was chosen for two main reasons, the number of negative and positive categories is equal, and the scales allow for

measuring the direction and the intensity of responses (Khorramdel, von Davier & Pokropek, 2019). Furthermore, for comparative purposes, most social science studies use the five-point scales. The questionnaire was reviewed by a panel of experts as explained in the section below.

3.7.2 Expert panel review

Strategic skills experts were approached to assist in validating and refining the content and the relevancy of the questionnaire (Yusoff, 2019). A total of three strategic skills practitioners were individually approached to constitute this panel. The 3-member expert panel had in excess of 50 years' experience in strategic skills and the years are broken down as follows; one had a field experience of 15 years, the second one had 17 years and the last expert had 20 years' experience in strategic skills development. Senior people with such vast experience in professions may justifiably be deemed to be experts in strategic skills planning and implementation. Before the meetings, a clearance letter from the CHIETA and a letter from the supervisor were emailed to the panel. The meetings were conducted between November 2017 and January 2018. The purpose of the panel was explained beforehand, and the panellists were informed of the researcher's ethical considerations, as well as the consent and that they had the right to stop participating at any stage. This panel addressed the survey questionnaires using criteria such as relevance, importance, length and clarity. The panellists were requested to rank the questions using these criteria on a Likert scale from 1 to 5. A question with an average score of "3" was to be modified. None of the questions had a score of "3" or below, therefore no modifications were necessary.

3.7.3 Questionnaire distribution

According to Zhang, Kuchinke, Woud, Velten and Margraf (2017) there are three methods of administering survey questionnaires, and these are mail, telephonic and self-administered. Questionnaires for persons who worked within the same office block as the researcher were personally administered. For the rest, survey monkey and emails were utilised. A decision had been made to assist respondents with explanations where necessary. However, there were no questions of clarity that were raised, possibly pointing to the relevance of the research questions, a positive reflection on the effort of the expert review panel and as a return on piloting the questionnaire.

On one occasion, one of the executive managers granted the researcher permission to address one of the skills forums at which 30 members were present. A background to the research was provided including the aim and the objectives of the study as well as the possible value it could add to strategic skills development.

Despite repeated follow-ups on outstanding questionnaires, only two responses were obtained from this group, which is a rate of 6.7%. A total of 320 questionnaires were eventually sent out and 110 responses were received. Of these, 106 were deemed valid, and four were not sufficiently completed (see Table 3.1 for a breakdown of the responses by constituency).

Below is Table 3.1 reflecting the total questionnaire responses.

Table 3.1: Survey Participants

CONSTITUENCY	TOTAL
Employer	52
Government	6
Union	9
Skills development provider	15
Employees	28
Total	**110**

As Table 3.1 shows, there was an overall effective response rate of 53%, which is more than the 30% minimum response rate recommended (Zhang, Kuchinke, Woud, Velten & Margraf, 2017). Though the response rate was empirically acceptable, it raised questions of commitment to the strategic skills agenda from the CHIETA stakeholders. It should also be mentioned that all of the committee members are remunerated to attend these meetings therefore there is an expectancy of some return on investment from them. The other data collection tool that was applied by the researcher was the interview schedule. This is discussed below.

3.7.4 Interviews

Interviews in research are described as short term, social interactions between individuals for the purpose of obtaining specific information (de la Croix, Barrett &

Stenfors, 2018; Majid, Othman, Mohamad, Lim & Yusof, 2017). The advantage of holding interviews is that few participants are needed to gather rich and detailed data (Adhabi & Anozie, 2017). Interviews assist researchers to understand processes through researcher probing (DeJonckheere & Vaughn, 2018). The processes the researcher sought to understand in this study were how the CHIETA and its strategic stakeholders developed strategic skills planning, how they initiated and sustained innovation, as well as how they collaborated and implemented strategic skills.

Interviews often lead to specific constructive suggestions, and they are good for obtaining detailed information (Van Puyvelde, 2018). There is an acknowledgement that interview processes can be both complex and demanding , the three identifiable types of interviews are the unstructured, the semi-structured and the structured interviews (Abhulimhen-Iyoha, 2020). According to Low (2019), the advantage of unstructured interviews is that they allow the researcher to understand the complexity of a situation without imposing any prior categorisation. A semi-structured interview, though following some structure, leaves room for an interviewee to provide reasons for expressing an opinion. On the other hand, a structured interview standardises the data collection process and makes it easier to compare answers between respondents, (Van Puyvelde, 2018). In this study, the researcher applied a semi- structured interview approach. This was informed by the phenomenon, which is a specialised field. In strategic skills management, context is critical, and if meaning is to be obtained, some level of self-expression is necessary, hence the semi-structured interviews. The following section discusses how the researcher developed the interview schedule.

3.7.5 Interview schedule development

The first stage was the analysis of results from the survey, this was then followed by an identification of issues that required further clarity on the variables under investigation vis; strategic skills planning, strategic skills innovation, strategic skills collaborations and strategic skills implementation (Dzwigol, 2020). Having identified these areas and being guided by reviewed literature, an interview guide was developed. This list of questions was then circulated to the same panel of experts who had been previously engaged in the survey questionnaire, (refer to Section 3.7.2). The interview schedule was piloted to six people who are strategic skills practitioners

(Harfield, Pearson, Morey, Kite, Canuto, Glover, Gomersall, Carter, Davy, Aromataris & Braunack-Mayer, 2020). Of these practitioners, two were CHIETA senior managers, three were strategic skills practitioners at some of the largest member companies and one was a skills development provider. The questions were then grouped under four main themes; strategic skills planning (five questions), strategic skills innovation (three questions); strategic skills collaboration and strategic skills implementation (two questions). The interview process is described below.

3.7.5.1 Interview process

Interviews are the common approach for conducting a qualitative inquiry, that its justification has become unnecessary (O'Connor & Joffe, 2020). The researcher conducted interviews with the CHIETA stakeholders namely employer and union representatives, CHIETA employees involved in either strategic skills planning and or implementation and the CHIETA board members. Owing to the small size of the CHIETA staff compliment, the researcher decided against using staff designations or their real names. The use of pseudo names protects respondents anonymity (Gerrard, 2018). To cut on travel costs, face-to-face interviews for this study were conducted only with respondents within a 10km radius of the researcher, telephonic interviews were conducted with those beyond this radius. All interviews were preceded by an expression of appreciation for making time to attend to the interview. This was followed by an explanation of the purpose for the interview, although this had already been explained in previous correspondence during the setting up of the appointment (Roberts, 2020). The CHIETA stakeholders interviewed are shown in Table 3.2. All CHIETA names provided are pseudo names to protect the anonymity of the participants.

Table 3.2: Interview Participants

	PSEUDO NAMES FOR CHIETA STAFF / CONSTITUENCY	MEMBERSHIP	GENDER
1	Dumi	CHIETA	Male
2	Xolani	CHIETA	Male
3	Jacob	CHIETA	Male
4	Cyril	CHIETA	Male
5	Magudumana	CHIETA	Female

6	Bester	CHIETA	Male
7	Precious	CHIETA	Female
8	Tino	CHIETA	Female
9	Chamu	CHIETA	Male
10	Gari	CHIETA	Male
11	Employer	External stakeholder	Female
12	Skills development provider	External stakeholder	Male
13	Skills development provider	External stakeholder	Female
14	Skills development provider	External stakeholder	Female
15	Former governing board member	External stakeholder	Female
16	Former governing board member	External stakeholder	Male
17	Jonso	CHIETA	Male
18	Labour representative and former executive	External stakeholder	Male
19	Former board chairperson	External stakeholder	Male
20	Simon	CHIETA	Male
21	Tindo	CHIETA	Male
22	Employer	External stakeholder	Female
23	Employer	External stakeholder	Female

The interviewees were asked to state the number of years they had been involved in strategic skills development. This was an attempt to gauge experience in the subject that they were being interviewed on. The researcher was of the view that the longer the periods of involvement in the field, the more knowledgeable the interviewees would be in the subject matter. This information is summarised in Table 3.3 below.

Table 3.3: Interviewees

Interviewee	Name/Constituency	No. of Years
1.	Former governing board member and union member	35
2.	Chamu- CHIETA employee	18
3.	Jonso- CHIETA employee	10
4.	Former governing board member and union member	19
5.	Governing board member and executive	13
6.	Skills development provider	8
7.	Tindo- CHIETA employee	8

8.	Simon - CHIETA employee	17
9.	Gari- CHIETA employee	25
10.	Precious- CHIETA employee	19
11.	Mish- CHIETA employee	7
12.	Charity- CHIETA employee	5
13.	Hongu- CHIETA employee	19
14.	Employer- CHIETA employee	17
15.	Labour representative and former executive	20
16.	Chamber chairperson and employer representative	23
17.	Former board chairperson	26
18.	Employer	24
19.	Tino- CHIETA employee	27
20.	Employer	21
21.	Skills development provider	19
22.	Skills development provider	13
23.	Employer	15

Most of the participants (16) had been in strategic skills planning and or implementation for a minimum of 15 years, though there were some (7) with less ranging between 5 years and 13 years. The participant with the longest service in the industry, a former CHIETA board chairperson, got involved in strategic skills planning from 1985 (35 years ago) as of 2020. He was one of the founding members of the SETAs and prior to their inception, worked with the Artisan Training Boards (ATBs), which were the predecessors to the SETAs. Of the other seven, they had experience ranging between five and 13 years. A total of 60 potential interviewees were contacted. Reminders were sent out to those who had not responded one week after the initial communication for them to indicate whether they had received the emails and whether they were willing to participate in the interviews. Telephonic follow-ups were made to those who had not responded. The researcher concluded that those who had not

responded at that time were not interested in participating and therefore no further effort was made to contact them.

Of the interviews, 16 were telephonic, five CHIETA employees and two stakeholders had face to face interviews. The researcher's approach in all the cases was to first introduce himself to the interviewee and restate the purpose of the interview, notwithstanding that this had previously been communicated by email. The interviewer further asked whether the interviewees were comfortable with the researcher recording the interview. All the interviewees agreed to this arrangement. Interviewees were further informed that anonymity was guaranteed. Of the 23 interviewees, only two requested anonymity. The transcripts of all the interviews were emailed to the interviewees for confirmation and all, except two, confirmed the correctness of the transcripts. The two did not respond despite telephonic and email follow-ups. The qualitative data were analysed using the Atlas.ti software. After analysing the 16th interviewee response, it became apparent to the researcher that no new information would be uncovered. Thus, saturation was reached at that stage (Hennink & Kaiser, 2022). Data analysis is discussed below.

3.8 Data analysis

Data analysis is the process of bringing order, structure and meaning to collected research data (Lester, Cho & Lochmiller, 2020). From the aforesaid, data interpretation can be described as part of the data analysis process. The two processes though interdependent, are not sequential. A researcher automatically interprets data whilst at the same time analysing it (Xu & Zammit, 2020).

3.8.1 Quantitative data analysis

Of the 110 questionnaires that were received, 4 of the questionnaires had missing data. Since the missing data was less than 5% of all the variables, there was no need to evaluate the pattern of the missing data (Watkins, 2018; Carpenter & Smuk 2021). Having used the five-point Likert scales, the researcher replaced the missing data on in two of the questionnaires with the median for each question. Ultimately, a total of 106 were analysed. The collected quantitative data was entered into Microsoft Excel. Rows were populated with the questions grouped under the respective construct as

they appeared on the questionnaire (Robinson, 2022). The second phase involved data cleaning and validation.

The data was then captured for analysis using the Statistical Package for Social Sciences (SPSS) version 25. Coding was developed using abbreviations. For example, the vision and the mission statement was coded as "VMS," strategic skills planning was coded as "SSP," strategic skills innovation was coded as "SSINOV," strategic skills collaboration was coded as "SSC," and strategic skills implementation was coded as "SSI" (Muller, Lange, Wang, Piorkowski, Tsay, Liao, Dugan & Erickson, 2019). The data was further coded according to scores 1-5 in SPSS based on the Likert scales. The means and the standard deviations were then calculated to provide an overview of the collected data.

In this study, the regression model was used to analyse the relationship between collaboration, innovation, planning and strategic skills development. The regression analysis was selected over the other inferential statistics techniques such as the t-test, ANOVA and the chi-square test because of the structure of the variables in this study. The variables in this research included both ordinal and nominal variables. Such variables can pose challenges for inferential statistics techniques such as the t-test, ANOVA and the chi-square and they can also destabilise the traditional regression models. To address such challenges, the researcher used the categorical regression analysis which is described below.

3.8.2 Categorical Regression Model

The categorical regression model converts nominal and ordinal variables to interval scales. The conversion maximises the connection between each explanatory variable (independent variable) and the dependent variable (Jung, Souza, Phillips, Rutherford & Whitten, 2020). Ordinal variables have arbitrary scales and these different scales yield different and incongruent findings. On the other hand, nominal variables produce an output that is difficult to interpret, and it might not provide the information on all the relevant comparisons (Kaliyadan & Kulkarni, 2019).A categorical regression was therefore conducted to find out if strategic skills collaboration, strategic skills innovation and strategic skills implementation (independent variables) had any impact on strategic skills development "dependent variable" (Tan, Bergmeir, Petitjean & Webb 2021).

Categorical regression essentially computes categorical data by assigning numerical values to the categories. This results in an optimal linear regression equation for the transformed variables.

The process quantifies the categorical variables so that the computation replicates the features of the original categories. The application of nonlinear transformations allows for the variables to be scrutinised at different levels to come up with the best-fitting model (Corduas & Picollo, 2023). Multiple regression analysis is then applied to these transformed variables (Hesamian & Akbari, 2021). The identified variables from the reviewed literature confirmed the reliability through the Cronbach's alpha calculated as .70 (Pelto, 2017). The calculated Cronbach's alpha for this study was .966, refer to Table 3.4 below.

The model specifications for categorical regression are as follows: Y_i

$= \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \boldsymbol{\varepsilon}$

Where:

Y_i = strategic skills planning

X_1 = vision and mission

X_2 = collaboration

X_3 = innovation

X_4 = strategic implementation

ε = error term

The following empirical model was therefore formulated:

F (Y_i) = (vision and mission, collaboration, innovation and strategic implementation + ε)

Where:

Y_i = strategic skills planning

ε = error term

Rigour in quantitative research design is discussed below.

3.8.3 Rigour quantitative data

In quantitative research, rigour is measured by validity and reliability. Validity refers to the extent to which research findings accurately measure that which it was originally intended (Osadebe & Kpolovie, 2019). There are five types of validity, namely face validity, construct validity, internal validity, reliability and external validity. These are explained in detail below, those that were applied in this research are identified and the reason for their inclusion is provided.

3.8.4 Content, face and construct validity

A survey has content validity, if in the view of the experts (for example, strategic skills professionals), the survey contains questions which cover all aspects of the construct that is being measured (Setia, 2017). On the other hand, when there is a logical relationship between the questions in a research instrument and the objectives of the study, the instrument is deemed to have face validity (Oktavia, Rajibussalim, Mentari & Mulia, 2018). To ensure face validity, the questionnaire was piloted with experienced strategic skills practitioners in the CHIETA and its strategic skills stakeholders representatives.

The questionnaire covered all the research objectives. It should be noted, however, that the logic on which a researcher develops questions is subjective, so face validity cannot be objective hence it varies from person to person (Hudson, Briley, Chopik & Derringer, 2019). If different questions are developed, the link between the objectives and the instrument might not remain the same. No objective conclusion can be drawn with any change in questions as this will yield a different result.

Construct validity is the extent to which an operation measures the concept which it purports to measure (Surucu & Maslakci, 2020; Almanasreh, Moles & Chen, 2019). The objective of piloting was to address construct validity and to incorporate any recommendations and concerns that were raised before circulating the questionnaire.

This research adopted an integrated methodology. This process allowed the execution of integration at every phase of the study as an iterative exchange between quantitative and qualitative strands (Akerblad, Seppanen-Jarvela & Haapakoski, 2021). This also strengthened the construct validity. Internal validity is discussed next.

3.8.4.1 Internal validity and how it was utilised

Internal validity refers to the extent to which one can infer that a causal relationship exists between two or more variables (Slocum, Pinkelman, Joslyn & Nichols, 2022). The variables in this case were classified into constructs and causal relationship inferences were utilised from Section B to Section E of the questionnaire. In this study relationship inferences were calculated on four constructs: strategic skills planning, strategic skills collaborations, strategic skills innovation and strategic skills implementation. Each of these constructs is made up of several questions which seek to address a specific construct. Thus, in subsequent chapters, reference will be made to these constructs. As an example, the strategic skills planning construct is made up of all questions that pertain to strategic skills planning, the same goes for the innovation construct which is a summary of all the questions pertaining to strategic skills innovation. External validity is discussed next.

3.8.4.2 External validity

External validity refers to the extent to which the findings can be generalised to particular persons, settings and times, as well as across types of persons, settings and times (Andrade, 2018). For purposes of creditworthiness of the quantitative data, the internal consistency method was measured using the Cronbach's alpha (Menne, Surya, Yusuf, Suriani, Ruslan & Iskandar, 2022). This is discussed in the section below.

3.9 Reliability test

Reliability is the degree to which research findings are independent of accidental circumstances (Ahmed & Ishtiaq, 2021). The Cronbach's alpha measures the internal consistency of a test or scale and this is expressed as a number between 0 and 1 (Taber, 2018). The closer the figure is to 1, the higher the reliability. There is no consensus regarding the acceptable minimum. Whereas Daud, Khidzir, Ismail and Abdullah (2018) recommend .60 as acceptable , Limon and Sezgin-Nartgun (2020); Wahl, Hermansen, Osborne and Larsen (2021) recommend .70 as the minimum. A reliability test was performed on the 51 non biographical questions. The Cronbach's alpha of the research instrument was 0.966, as reflected in Table 3.4 below. This indicates a high level of internal consistency and reliability.

Table 3.4: Reliability Statistics

Cronbach's Alpha	No. of Items
0.966	51

The researcher used an Explanatory Factor Analysis (EFA) technique. An EFA is a statistical procedure that is used to reduce a large number of variables or factors to a smaller number of "factors/components" which one can work with. This process commences with the identification of factors which are consistently moving, those with the least corelation are eliminated. Factor extraction and factor rotation are then applied to the reduced factors (Shrestha, 2021). In this research, the factorability of the 51 items in the questionnaire was examined using several well-recognised criteria, one of which was the Kaiser-Meyer-Olkin (KMO) , this tests adequacy or sufficiency of a sample size. A figure closer to "1" indicates that the factor analysis may be useful with the data at hand. In this research, the KMO was .814 , according to Makki and Mosly (2020), this is considered acceptable. The Bartlett's test of sphericity tests the strength of the relationships of data tested (Shrestha, 2021). It measures the the homogeneity of variances between factors researched on (Gangil & Vishnoi, 2020) . The result of the Bartlett's test in this research yielded a figure that was significant (X^2 (3804.166) = 1275, $p<0.05$). All the diagonals of the anti-image correlation matrix were over 0.5. meaning all the factors were acceptable for further analysis.

Table 3.5: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.814
Bartlett's Test of Sphericity	Approx. Chi-Square	3804.166
	Df	1275
	Sig.	.000

The next stage entailed the development of the communalities matrix. The communality tables provide details of how much of a factor's variance is explained (De Silva, Chinna & Azam, 2019).

This is important as it indicates the amount of variance in each variable that is accounted for. All calculated communalities were above .4; confirming that each item shared some common variances with other items (De Silva, Chinna & Azam, 2019:70). As depicted in Table 3.6 below, the lowest value in the "Extraction" column is .591. Low values indicate candidates for removal after one examines the pattern matrix. Given these overall indicators, factor analysis was deemed to be suitable with all 51 items.

Below in Table 3.6 are the tabulated communalities.

Table 3.6: Variable commonalities

	Initial	Extraction
VM8	1.000	0.817
VM9	1.000	0.814
VM10	1.000	0.683
VM11	1.000	0.771
VM12	1.000	0.588
SSP13	1.000	0.663
SSP14	1.000	0.605
SSP15	1.000	0.652
SSP16	1.000	0.722
SSP17	1.000	0.646
SSP18	1.000	0.788
SSP19	1.000	0.778
SSP20	1.000	0.691
SSP21	1.000	0.820
SSP22	1.000	0.680
SSP23	1.000	0.794
SSP24	1.000	0.763
SSP25	1.000	0.653
SSP26	1.000	0.742
SSP27	1.000	0.712
INO28	1.000	0.733
INO29	1.000	0.679
INO30	1.000	0.786
INO31	1.000	0.729
INO32	1.000	0.696
INO33	1.000	0.654

INO34	1.000	0.758
INO35	1.000	0.793
INO36	1.000	0.778
INO37	1.000	0.681
INO38	1.000	0.702
SSP39	1.000	0.591
SSP40	1.000	0.691
SSP41	1.000	0.766
SSP42	1.000	0.691
SSP43	1.000	0.729
SSP44	1.000	0.770
SSP45	1.000	0.736
SSP46	1.000	0.717
SSP47	1.000	0.686
COL48	1.000	0.754
COL49	1.000	0.833
COL50	1.000	0.867
STRI51	1.000	0.706
STRI52	1.000	0.694
STRI53	1.000	0.748
STRI54	1.000	0.697
STRI55	1.000	0.653
STRI56	1.000	0.783
STRI57	1.000	0.745
STRI58	1.000	0.805

Extraction helps to reduce dimensionality through feature extraction methods such as the principal component analysis “PCA”.

3.9.1 Extraction Method: Principal Component Analysis (PCA)

Factor extraction keeps only the most important information by selecting the principal components that explain most of the relationships among the features (Dempster, Rossen, Kazachkova, Pan, Kugener, Root & Tsherniak, 2019). PCA also helps to form uncorrelated linear combinations of observed variables. For purposes of extraction, biographic construct was excluded.

The Eigen values for the non-biographic data were calculated. The purpose for generating the eigen values and for rotating them was to identify those factors with the highest values. In line with the KMO criterion, only the eigenvalues greater than 1 were retained. Further tests were performed on these factors. Five factors were extracted for further study as shown in Table 3.7.

The study covered the effect of the following constructs/variables; strategic skills planning, strategic skills innovation, strategic skills collaborations and strategic skills implementation (independent variables) on strategic skills development (dependent variable). The five-factor solution, which explained 59.8% of the variance (see Table 3.5), was preferred because of:

(a) Its previous theoretical support;

(b) The 'levelling off' of eigenvalues on the scree plot after five factors; and

(c) The insufficient number of primary loadings and difficulty of interpreting the sixth factor and subsequent factors.

Table 3.7 below presents the eigenvalues for all the 51 factors together with the rotated loadings. It is clear that the first five factors explained 39%, 6.5%, 5.4%, 5.0% and 3.7% of the variance, respectively. The solutions for all the five factors were examined using the varimax rotations of the factor loading matrix.

Table 3.7: Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.894	39.009	39.009	19.894	39.009	39.009	8.321	16.315	16.315
2	3.325	6.520	45.528	3.325	6.520	45.528	7.159	14.037	30.352
3	2.802	5.495	51.023	2.802	5.495	51.023	6.112	11.983	42.335
4	2.575	5.050	56.073	2.575	5.050	56.073	5.420	10.628	52.963
5	1.886	3.698	59.770	1.886	3.698	59.770	3.472	6.807	59.770
6	1.571	3.080	62.850						

7	1.526	2.993	65.843						
8	1.289	2.528	68.371						
9	1.146	2.248	70.618						
10	1.014	1.987	72.606						
11	.999	1.959	74.565						
12	.979	1.919	76.484						
13	.912	1.788	78.272						
14	.815	1.598	79.870						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
15	.707	1.385	81.256						
16	.677	1.328	82.584						
17	.673	1.320	83.904						
18	.635	1.246	85.150						
19	.576	1.130	86.280						
20	.531	1.041	87.321						
21	.485	.950	88.271						
22	.453	.887	89.158						
23	.417	.817	89.975						
24	.408	.800	90.775						
25	.376	.737	91.512						
26	.365	.716	92.228						
27	.353	.692	92.919						
28	.334	.656	93.575						
29	.299	.587	94.162						
30	.280	.549	94.711						
31	.271	.532	95.243						

32	.250	.490	95.733						
33	.225	.442	96.175						
34	.218	.428	96.603						
35	.207	.406	97.008						
36	.192	.376	97.384						
37	.177	.347	97.731						
38	.164	.321	98.052						
39	.144	.283	98.335						
40	.118	.232	98.567						
41	.115	.225	98.793						
42	.105	.205	98.998						
43	.096	.189	99.186						
44	.093	.183	99.369						
45	.077	.151	99.520						
46	.061	.120	99.639						
47	.056	.111	99.750						
48	.045	.089	99.839						
49	.030	.058	99.897						
50	.028	.055	99.952						
51	.024	.048	100.000						

3.10 Qualitative data analysis procedure

Thematic analysis refers to the process of identification, analysis, description, organisation and the consequent reporting of themes found within a data set (Jnanathapaswi, 2021; Nowell, Norris, White & Moules, 2017). Additionally, Nowell *et al.* (2017), reason that thematic analysis brings coherence to the two languages of qualitative and quantitative analysis by comparing and contrasting the two. The process followed in the qualitative data analysis is described below.

3.10.1 Familiarisation

Before the in-depth analysis of the research data, a preliminary analysis was done, and this encompassed the double checking of the collected data as well as making sure that the gathered data reflected what the participants said. The researcher also familiarised himself with the data by going through it.

3.10.2 Coding

The next step was assigning codes to the collected data. Codes are basically descriptions of what was said by participants in interviews, (Castleberry & Nolen, 2018). The researcher coded interesting or useful parts of the interviews thereby organising the data into meaningful groups.

3.10.2.1 Sorting codes into themes

The researcher then examined the codes, and their quotations then integrated the codes into themes that revealed important information about the data (Bostrom, 2019). An iterative approach was utilised where the researcher moved codes back and forth so as to form different themes where possible.

3.10.2.2 Refining themes

During this phase the researcher reviewed and refined the identified themes. The researcher went through all the quotations that were associated with the codes to make sure that they linked with the themes (Lemon & Hayes, 2020). This was done until the researcher felt that the themes were coherent and distinctive.

3.10.2.3 Defining and naming themes

The themes were then described and named. This included highlighting and explaining what was interesting about the themes and why the researcher thought it was interesting (Kiger & Varpio, 2020). The themes were then clearly defined and described, thereby identifying the story behind the themes and how the story relates to the research objectives.

3.11 Rigor- Qualitative Data

Being aware of the fact that qualitative analytical procedures are often criticised for lack of scientific rigour, transparency and of being researcher biased (Maula & Stam,

2020), in this study, the researcher made an effort to demonstrate rigour in the qualitative analysis by reporting personal biases that may have influenced the findings through ontological standing and epistemological preferences.

3.11.1 Peer review

Peer review refers to the evaluative activities wherein assessments and valuations of the merits of an academic endeavour are done (Forsberg, Geschwind, Levander & Wermke, 2022). This procedure was used for both instrument testing and interpretation. The peer reviewer was an experienced researcher in one of the SETAs in South Africa and has expertise and knowledge of the subject matter of the thesis. She provided valuable and quality advice and feedback. Thick description in quality research is discussed below.

3.11.2 Thick description

A thick description refers to a procedure that is used in qualitative research which ensures validity and reliability. This procedure is concerned with describing the setting, the participants, and the themes of a qualitative study in rich detail (Seo, 2021). A thick description has been used in this study in the presentation of the qualitative research findings, where actual words of respondents have been used extensively. The purpose of reporting findings using thick descriptions is twofold; provided as much detail as possible for the reader, and it also enables readers to make decisions about the applicability of the findings to different or similar contexts. In chapter 1, the researcher described in detail the main concepts involved in this study. These are strategic skills planning, strategic skills innovation, strategic skills collaborations and strategic skills implementation. A detailed and thorough background of the CHIETA and its strategic stakeholders where the research took place was provided.

3.11.3 Validity - qualitative research

Validity in qualitative research refers to the appropriateness of the tools, the processes and the collected data, this demonstrates that there is honesty and genuineness (Coulter, Crawford, Vernon, Hurwitz, Khorsan, Booth & Herman, 2019; Gordon, 2018). The factors for consideration are whether the research questions are valid for the desired outcome, or whether the choice of methodology is appropriate for answering

the research question, and whether the design is valid for the chosen methodology. Another factor considered is whether the sampling and the data analysis are appropriate and finally, whether the results and the conclusions are valid for the sample, given the context. The piloting of interview questions resolved some of these queries.

The researcher focused on an iterative procedure to allow multiple checks (Cheing, Hong, Kuek, Chai & Cham, 2020). Additionally, use was made of a contact list that was provided by an independent third party, this assisted in mitigating bias. Attempts were made to ensure that data interpretations were consistent and transparent. The identification and highlighting of similarities and differences in the received responses ensured that the different perspectives were fairly presented in this research. McGinley, Wei, Zhang and Zheng (2020) posit that rigour in qualitative research is demonstrated through trustworthiness, consistency and neutrality. Trustworthiness is discussed in the section below.

3.11.4 Trustworthiness and Creditworthiness

Trustworthiness included the rich and thick verbatim descriptions of participants' responses in support of the findings (Riazi, Rezvani & Ghanbar, 2023). The process of seeking participants' confirmation of the accuracy of the transcribed interviews and inviting them to comment on whether the final themes and concepts adequately reflected the phenomena being investigated also assisted in this regard (Messina, Barros, Soares & Matopoulos, 2020). Additionally, the researcher provided a detailed and logical progression of the research process, this logic and process can be tested (Callaghan, 2019; Basias & Pollalis, 2018).

Creditworthiness in this study was achieved through data triangulation wherein the researcher used questionnaires and interviews (Noble & Heale, 2019). As an employee of the CHIETA and having been exposed to and experienced this phenomenon, the researcher had challenges maintaining absolute objectivity and neutrality. To mitigate this risk, the researcher did self-reflection on the followed process and discussed the transcriptions with three strategic skills practitioners, one from the CHIETA and two external strategic skills stakeholders. This was done in no specific sequence, but it assisted in minimising bias. The section below discusses rigour in quantitative data.

3.12 Rigor- Quantitative Data

According to Maula and Stam, (2020) quantitative rigour refers to the extent to which researchers strive to improve the quality of a study and this is accomplished in measuring validity and reliability. Zuo and Milham (2019) as well as Elliott, Knodt, Ireland, Morris, Poulton, Ramrakha, Sison, Moffitt, Caspi and Hariri (2020) define reliability as the extent to which the results are consistent over time and are an accurate representation of the total population under study. The data collection methods applied in this study present some challenges on reliability; some of these challenges include self-reporting bias, observer bias, and confirmation bias (Rollwage, Hauser, Moran, Dolan & Fleming, 2020). Social desirability bias is where the participants respond according to what is generally acceptable and not to reality (Bergen & Labonté, 2020). Observer bias occurs where the researcher records the respondents' answers according to their own interpretation of the phenomenon (Wang & Cheng, 2020).

In this study, reliability was enhanced through triangulation (Moon, 2019). Observer bias was minimised through objective recording of findings. The researcher used the Cronbach Alpha to ascertain the reliability of the quantitative instrument that was used for data collection and to measure the constructs and the internal consistency of the utilised scales (Surucu & Maslakci, 2020). Triangulation will be discussed below.

3.13 Triangulation

Triangulation refers to the use of more than one method for data collection in a single study to avoid bias and to ensure validity (Natow, 2020; Dzwigol, 2020). This was done by collecting data from interviews and questionnaires. It helped to overcome potential bias and sterility of a single-method approach (Dzwigol, 2020; Farquhar, Michels, & Robson, 2020). To strengthen validity, the researcher conducted a comprehensive case study and had follow-up interviews with 26% of the survey respondents. It was comprehensive because the CHIETA was the best fit for the strategic skills studies and met all the characteristics for a strategic skills vehicle (Pargaonkar, 2023). Integration of qualitative and quantitative data is discussed next.

3.14 Intergration of qualitative and quantitative data

Authors such as Barnes and Weller (2017) as well as Dawadi, Shrestha and Giri (2021:27) recommend that at least some or all of the following stages, should be adopted in a mixed method research study:

a) Data reduction;

b) Data display;

c) Data transformation;

d) Data correlation;

e) Data consolidation;

f) Data comparison;

g) Data integration.

In this study, integration was done through data correlation and data comparison. The data that was collected through the survey was compared to the data that was collected through interviews. Ethics are discussed next.

3.15 Ethical considerations

Gabriel (2020) refers to ethics as the appropriateness of one's behaviour in relation to the rights of those who become the subject of research or those that are affected by it. According to Prosser, Judge, Bolderdijk, Blackwood and Kurz (2020), there are two societal rights and ethical guidelines that researchers should uphold, and these are; confidentiality and informed consent. Informed consent requires that no one should be forced or coerced to participate in any study (Millum, & Bromwich, 2021). Confidentiality demands that the researcher respects the privacy and anonymity of respondents as a primary responsibility (Varkey, 2021). Both these rights were complied with in this research.

Respondents were further advised that they could withdraw from participation at any time if they felt uncomfortable to continue. It is important to note that though this was spelt out in the letter of introduction sent out with the questionnaires, this was also

discussed at the beginning of the interviews, only three participants opted out of the survey (Gefenas, Lekstutiene, Lukaseviciene, Hartlev, Mourby & Cathaoir, 2022). The reason in the three cases was that the respondents felt they had not been in their respective organisations long enough to contribute meaningfully to the survey. Respondents were also advised about the nature and objectives of the study. In conducting this research, confidentiality, privacy and anonymity of the participants were respected. The researcher obtained approval from the then CHIETA CEO to use the CHIETA as a case study and obtained a letter of introduction to the CHIETA stakeholders requesting their participation and confirmation of the CEO's sanctioning of the study (Klykken, 2022). These documents are attached as annexures to this thesis. A letter for data collection was obtained from the academic supervisor affiliated with the Da Vinci Institute for Technology Management, copies of all this documentation has been attached as annexures to this study. No payments were made to any of the participants as a means of coercing or influencing them to respond in a particular way. Respondents' right to privacy was guaranteed and no real names were used thereby protecting the actual identities of the involved people (Azees, Vijayakumar, Karuppiah & Nayyar, 2021). Data collection was done in a way that would not violate the rights of individuals and all references cited in this work have been acknowledged.

The researcher committed to being honest with professional colleagues in that findings would be reported accurately and honestly without making any misrepresentations of any kind, either intentionally or otherwise (Nneoma, Udoka, Nnenna, Chukwudi & Paul-Chima, 2023). Should participants require results of the study, a report can be sent to them in a de-identified form following approvals from the Da Vinci Institute for Technology Management. Hardcopies of the collected data will be stored for a period of five years in a locked cabinet at the researcher's premises. Electronic data will be stored on a password protected personal computer for analysis purposes, but this data will be erased after five years. Only the supervisor and the student will have access to the data in a password protected hard drive.

3.16 Summary of the chapter

The chapter introduced the research design utilised in the study. The applied research methods were also stated and justified. The research population was explained as well as the samples and the reasons for choosing the respective sample techniques. The research tools utilised and the process followed in data collection were also provided.

3.17 Conclusion

Having presented the research design used in this study, the researcher went on to state the study objectives as well as put the design applied into proper perspective. The data collection methods were outlined and justified. The researcher utilised a combination of web-based, hand-delivered and email delivery for the survey. The utilised analysis methods were described in detail. The chapter also discussed issues of validity and reliability as they pertain to quantitative and qualitative methods.

As a follow up on the quantitative methodology, a qualitative methodology was employed to gain detailed and rich descriptions of the stakeholders' perspectives and experiences in strategic skills planning, innovation, collaboration and implementation at the CHIETA and in the chemical sector. Qualitative data was collected through interviews that were held with a sample of the CHIETA and its strategic skills stakeholders. The data collection was through a combination of both face to face and telephonic interviews, and this assisted in providing context to the survey responses.The creditworthiness and the trustworthiness of the qualitative analysis was addressed. The next chapter presents the findings and the analysis of the study.

CHAPTER 4

PRESENTATION OF FINDINGS AND DATA ANALYSIS

4.1 Introduction

This chapter presents the data findings based on the responses from the questionnaires and the interview schedules as received from the participants. Responses from the questionnaires and from the interview schedules were compiled, examined, evaluated and analysed to answer the research questions. Quantitative data analysis is the process of analysing and describing data that is number based (Ameer, 2021). Since the study utilised a mixed methods approach, the qualitative data that was collected through the interviews was also analysed (Lester, Cho, & Lochmiller, 2020). According to Lochmiller and Lester (2017), qualitative data analysis brings meaning to data some of the qualitative approaches to analysis include affixing codes, reflections sorting and isolating data.

The following are the steps that were used in the analysis; the first step was a presentation of the quantitative findings on a construct. This was followed by an analysis of the individual questions comprising the respective construct. In some cases, the quantitative analysis of the individual questions was followed by a presentation of the dominant emerging theme from the qualitative analysis. The themes are discussed in detail in Section 4.10 below. The researcher chose this approach for data triangulation purposes. As stated in Chapter 3, the researcher used a mixed methods approach, which utilised both quantitative and qualitative data. Of the interview sample, six were from the survey respondents. The balance of the interviewees was a new sample independent of the survey population. While the purpose of the quantitative data analysis was to identify, describe and explore the relationships between the dependent and the independent variables on the phenomenon under study, the purpose of the qualitative analysis was primarily to identify the themes that is, a thread within the responses supplied.

As stated in Chapter 3, Section 3.7.3, a total of 320 questionnaires were distributed. 110 questionnaires were returned, of which four were not fully completed and they

were deemed as unusable. The balance of 106 returned questionnaires were analysed. The researcher used the SPSS 25; to analyse the quantitative data whilst a thematic analysis was utilised for the analysis of the qualitative data. There was no set sample size for the interviews. The objective was to obtain a sample that was big enough to reach saturation point. In total though, 23 participants responded, and all were analysed. Saturation point was reached at the 16th participant. The findings were presented in line with the research objectives as stated in Chapter 1, Section 1.5. The chapter ends with a summary of the findings.

As referred to previously in chapter 2, the CHIETA strategic skills stakeholders are from different constituencies; employers, labour as represented by unions, government as represented by the DHET and skills development providers. The purpose of the following two questions was to determine the constituency representation in the survey.

4.2 Stakeholder representation

Question 1 & 2: Are you an employee or an external stakeholder of the CHIETA and which stakeholder constituency do you represent?

These were originally two separate questions, for analysis purposes, questions 1 and 2 were consolidated as their combined interpretation provided more clarity. As mentioned above, the CHIETA strategic skills stakeholders came from a number of different constituencies. It was therefore important to have respondents from the entirety of the strategic skills stakeholder population. Of the respondents, 76% were external stakeholders and 24% were CHIETA employees. Further analysis of the stakeholder constituency revealed that 48% were employers. Employers constituted the highest members of the stakeholders, and this was an accurate representation of this constituency. Skills development providers constituted 15%, while the union representation was 8% of the total respondents. Government/community representation was 6%. This was the least represented in terms of actual membership and this was reflected in the analysis. This representation, except for the CHIETA employees, mirrored the actual percentages in the different skills forums such as the chambers, the regional skills forums and research colloquiums, where the employers constituted the majority.

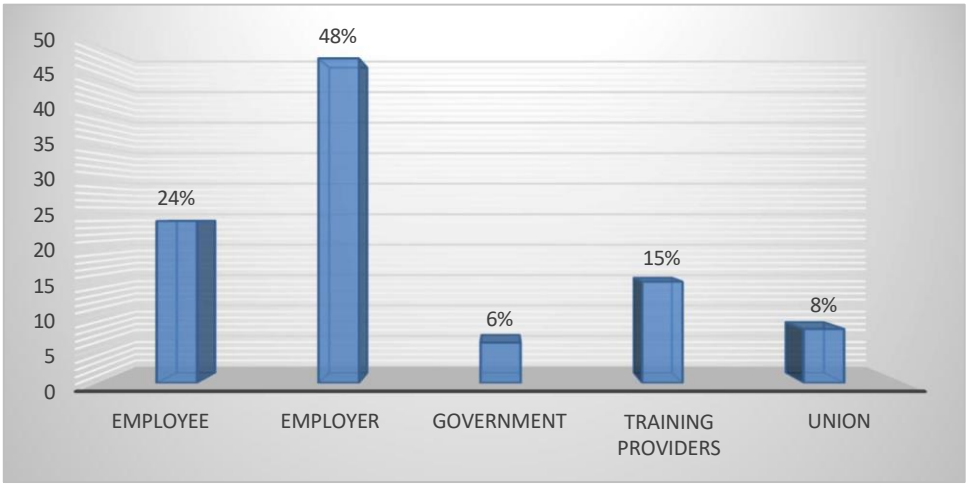

Figure 4.1: Stakeholder structure representation

Question 3: For how long have you been involved in strategic skills development?

The researcher was interested in respondents with demonstrated strategic skills planning and strategic skills implementation industry knowledge and experience and this question sought to address that.

Figure 4.2 shows that a significant number (44%) had worked for periods between 10 and 14 years whilst 32% of the respondents worked for less than 10 years. A relatively low percentage (24%) of the respondents had worked for periods exceeding 15 years. The researcher expected to obtain data from experienced individuals within the sector. Experienced respondents are an invaluable source of industry knowledge, and they provide useful data to the research. It can be argued that a majority (68%) of the respondents had been in strategic skills employment for a minimum of 10 years and therefore they could engage meaningfully in strategic skills discourse. This confirms the relevancy of the sample to the research objective.

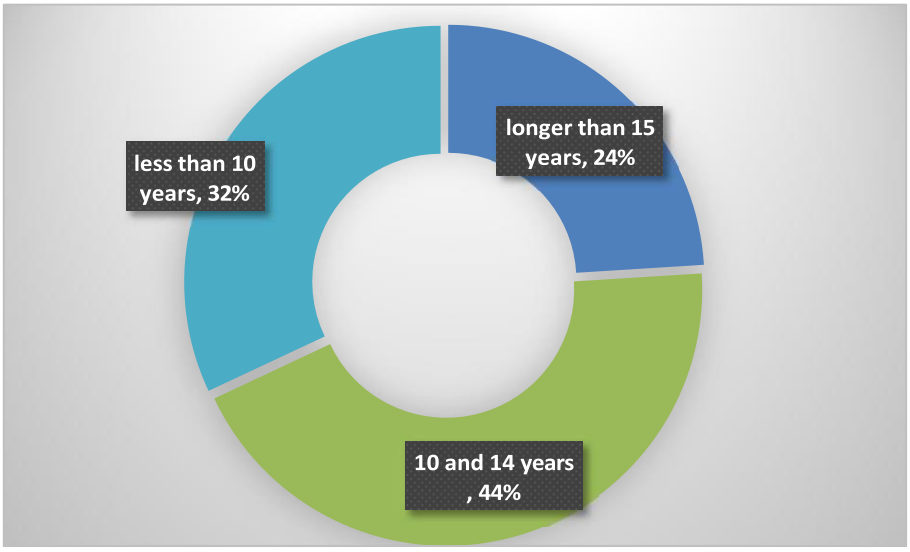

Figure 4.2: Respondents' period of service

The following question investigated whether participating organisations had a strategic planning unit.

Question 4: Does your organisation have a strategy unit?

The central issues in this study were to assess the level of strategic skills planning and strategic skills implementation within the CHIETA and its strategic skills stakeholder companies. The researcher was of the view that the presence of a strategic planning unit in an organisation demonstrated the importance placed by the respective organisation on strategic planning. In this study, most respondents (75%) stated that their respective employing organisations had a strategy unit. Only a quarter said that they did not have such a unit. It can be concluded that most of the organisations had strategy units thereby emphasising their level of commitment to strategy.

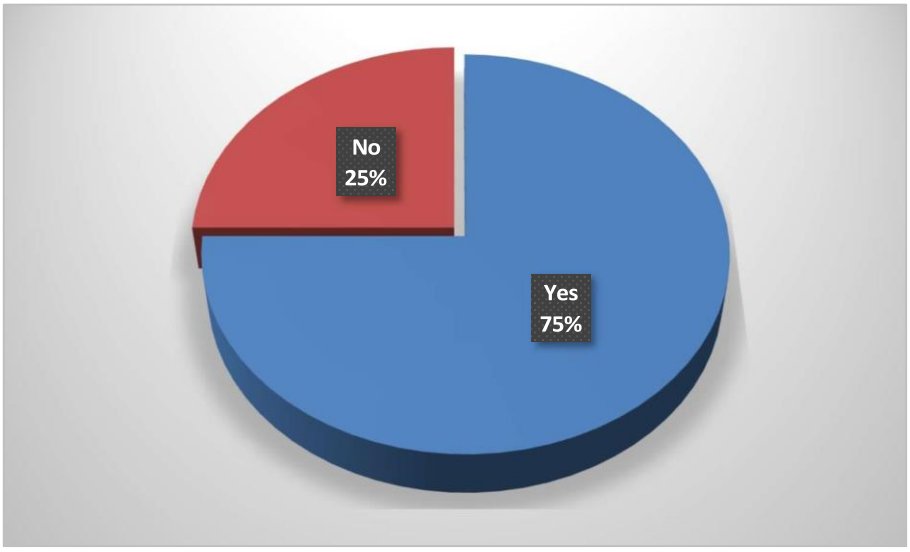

Figure 4.3: Presence of Strategy unit in the organisation

The following question was important as the primary criterion for inclusion in the sample was that respondents must be involved in either strategic skills planning or strategic skills implementation.

Question 5: Are you involved in strategic skills development?

Most respondents (75%) indicated that they were involved in strategic skills development. This strongly correlated to question 4 above with respect to the organisations having a strategy unit. It is interesting to note that 25% of the respondents reported that they were not involved in strategic skills development, yet the researcher only sent questionnaires to participants who were stated as being involved in strategic skills and who participated in one or more of the CHIETA strategic skills development structures. There are two possible explanations for this outcome. Either the stakeholder representatives lacked appreciation of the key role they play on the CHIETA forums, or they did not care about strategic skills at all. This then raises questions about the level of commitment and suitability of some of the stakeholder representatives on the CHIETA stakeholder forums.

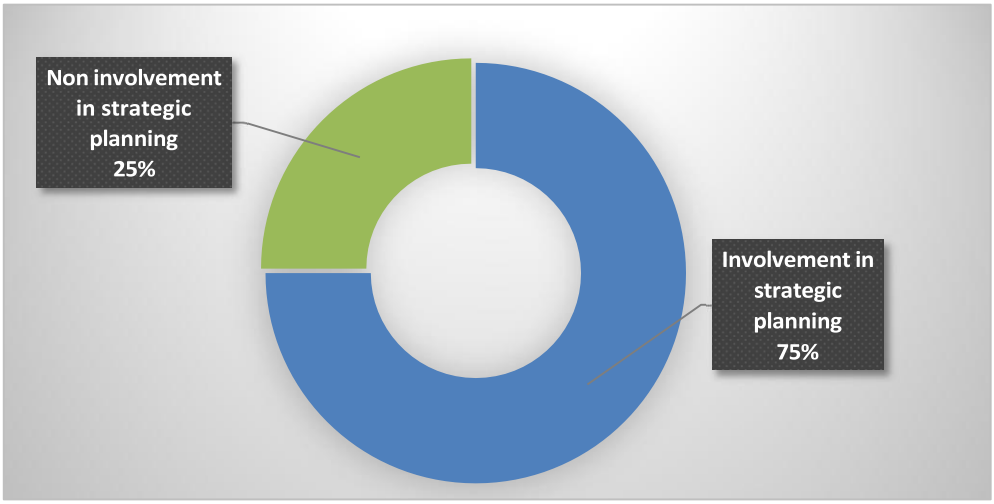

Figure 4.4: Respondents' involvement in strategic skills development

The following question sought to address the number of employees in each respondent's employing organisation as an indicator of the company size.

Question 6: How many employees does your organisation employ?

The researcher believed that approaches to solving strategic skills matters could be company size dependent hence the need for this question. The bigger a company is, the more formalised and complex processes are, and the smaller an organisation is, the converse tends to be true. It was this understanding that motivated the inclusion of this question.

Results show that most of the companies (59%) employed 251 or more employees (representing large companies), 26% of the companies employed between 51 and 250 employees (representing medium companies) and only 15% were small companies employing less than 50 employees (Government Gazette, 2019). It may be concluded that all company sizes were fairly represented in the research sample.

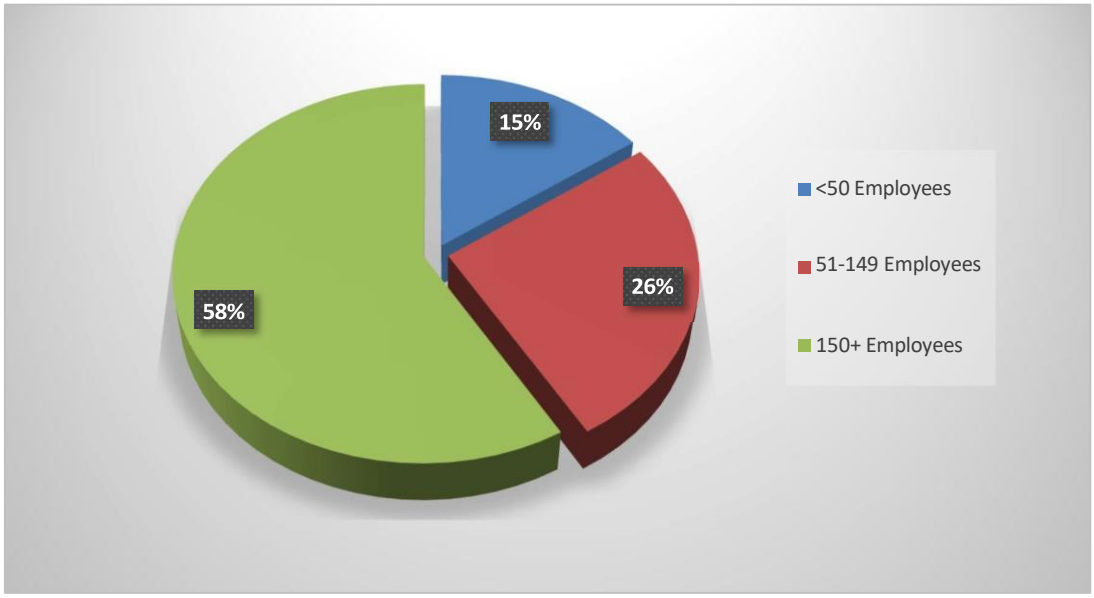

Figure 4.5: Number of employees per company size

The purpose of the following question was to identify the geographical location of the companies as represented by the participants in the research.

Question 7: In which region are you based?

This assisted the researcher in determining whether the study covered the chemical industry across the country, particularly for purposes of generalisation of the findings. As can be seen from Figure 4.6 below, there were respondents from eight of the nine provinces in the country. Most of the respondents were from Gauteng (51.9%), followed by KwaZulu Natal (22.6%). The third-most respondents were based in the Western Cape (13.2%), Free state 4.7%, Eastern Cape 3.8%, Mpumalanga at 2.8%, and Limpopo had the lowest representation at (0.90%). It may be concluded that all provinces in which the CHIETA affiliated companies operate in were represented.

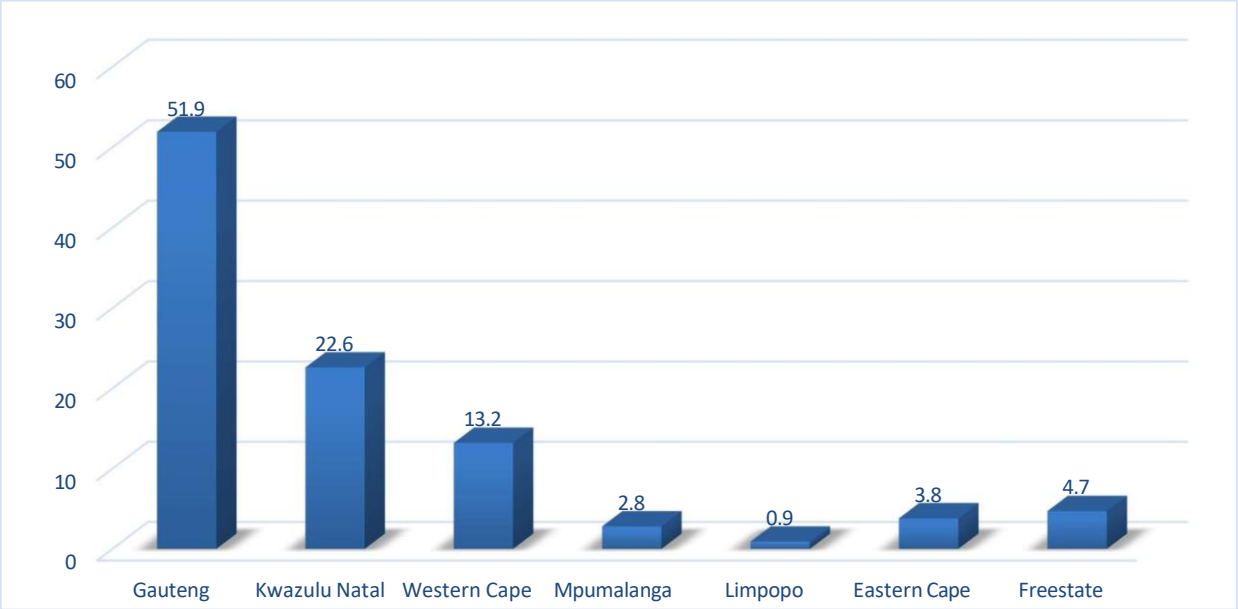

Figure 4.6: Geographical location of respondents by province

The next section presents the findings on the vision and the mission statement construct. The presentation was in two phases. First, was a high-level graphical presentation of the quantitative findings of the construct. This was followed by a presentation of the findings on the individual questions making up the construct. The purpose of the second phase presentation was to disaggregate the construct to provide a better view of the factors that individually contributed to the overall construct picture.

4.3 CHIETA'S strategic skills - vision and mission statements

Question 8: Are you aware of the CHIETA's Vision and Mission statements?

Whereas the vision statement defines the purpose of the organisation, the mission statement provides the desired direction to be followed to reach the vision (Alegre, Berbegal-Mirabent, Guerrero & Mas-Machuca, 2018). Jointly, the vision and the mission statements assist organisations to align organisational resources towards achieving a successful future. Thus, the researcher wanted to ascertain congruency of the shared strategic skills vision and mission amongst the different CHIETA strategic skills stakeholders.

Of the respondents, 62% were aware of the CHIETA's vision and mission statement, 33% were neutral and 14% indicated that they were not aware of the CHIETA's vision and mission statement. The implication of this finding is that there might be blockages in the transformation of strategic skills-thinking into a successful strategic skills plan because of the high percentage of employees unaware of the vision and mission statements.

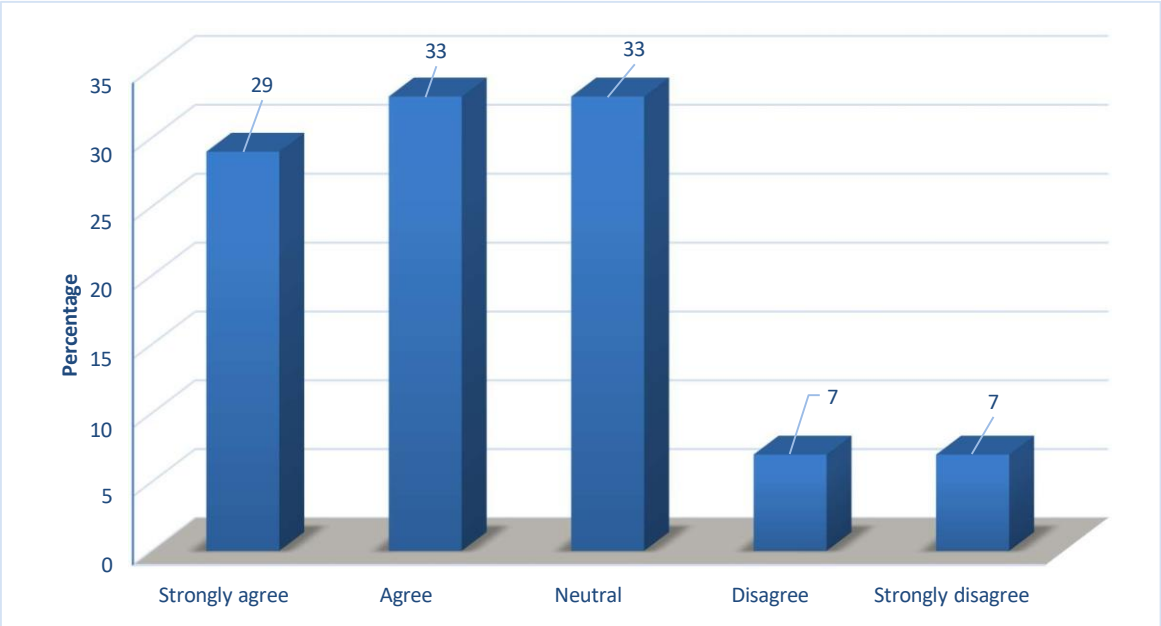

Figure 4.7: Respondents' awareness of CHIETA's vision and mission

To better understand the overall picture presented in Figure 4.7 above, the individual questions comprising the construct are discussed below.

Question 9: Is there wide participation in the development of the CHIETA's vision and mission statement?

Figure 4.8 shows that 61% of the respondents were of the view that there is participation in the development of the CHIETA's vision and mission statement whilst 33% were neutral, 4% disagreed, while 2% strongly disagreed with this statement. This finding strongly correlates to the finding in question 8 above. It can be concluded that there is wide participation in the development of the CHIETA's vision and mission

statement. The CHIETA's vision statement states: World-class education and training for the chemical industries sector (CHIETA, Annual report, 2019).

4.3.1 Participation in the development of the CHIETA's vision and mission

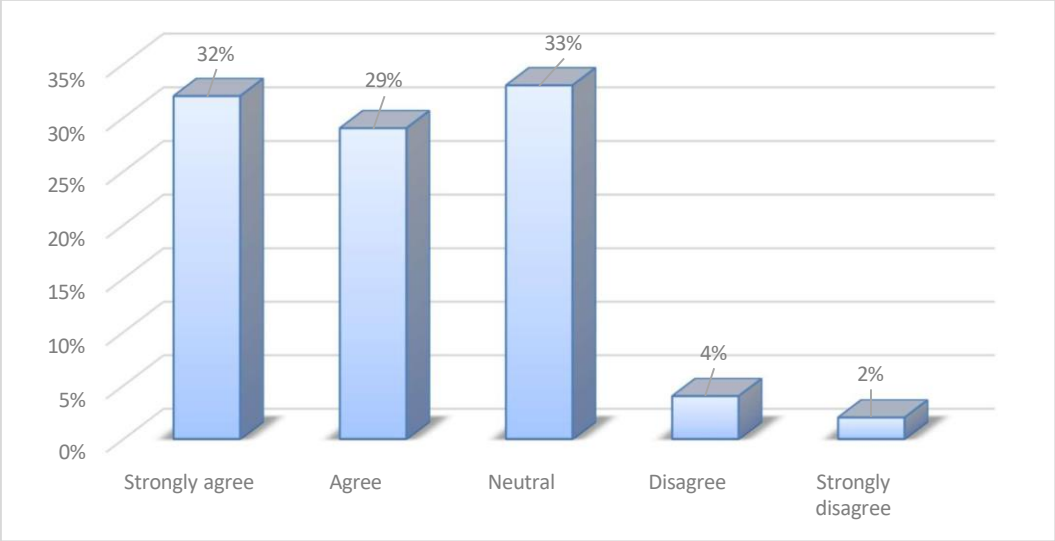

Figure 4.8: Respondents' participation in the development of the CHIETA's vision and mission

Owing to the importance of an organisation's vision statement to its strategic direction, the researcher sought to understand whether the vision statement was clear.

Question 10: Is the CHIETA's vision statement clear?

According to Malnight, Buche and Dhanaraj (2019), clarity of purpose is critical in driving an organisation's strategy. Figure 4.9 below shows that 60% of the respondents agreed that the vision statement was clear. This strongly correlates with Question 8 above, where 61% affirmed awareness of the CHIETA's vision statement. However, a significant percentage (32%) of the respondents was undecided. A few (8%) believed that the vision statement was not clear and therefore it was not understood by the stakeholders. It can be concluded that most of the respondents believed the CHIETA's vision statement was clear.

4.3.2 Vision statement

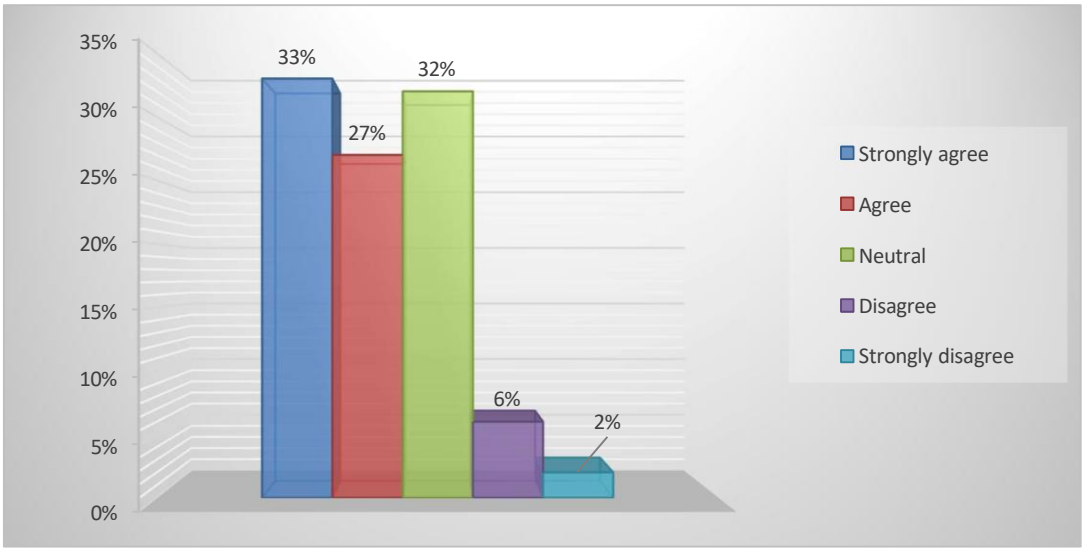

Figure 4.9: Clarity of CHIETA vision statement

The researcher sought to enquire on whether the CHIETA's mission was clearly disseminated. This is discussed in the next section.

The chemical industry and the communities in which the stakeholder companies operate have expectations from the CHIETA. These expectations, which are related to the offered programmes and services by the CHIETA are referred to as the organisational mandate and they are reflected in the mission statement.

Figure 4.10 below shows that 77% of the respondents indicated that the CHIETA's mission statement was well disseminated. It is rather paradoxical that a large majority of the stakeholders agreed that the CHIETA's mandate was clear, yet, in response to questions 8 and 9, only 62% and 61% respectively affirmed their awareness of the vision and that the CHIETA's vision statement was clear and understood by all.

4.3.3 Mission statement

Question 11: Is the Mission Statement well disseminated to all stakeholders?

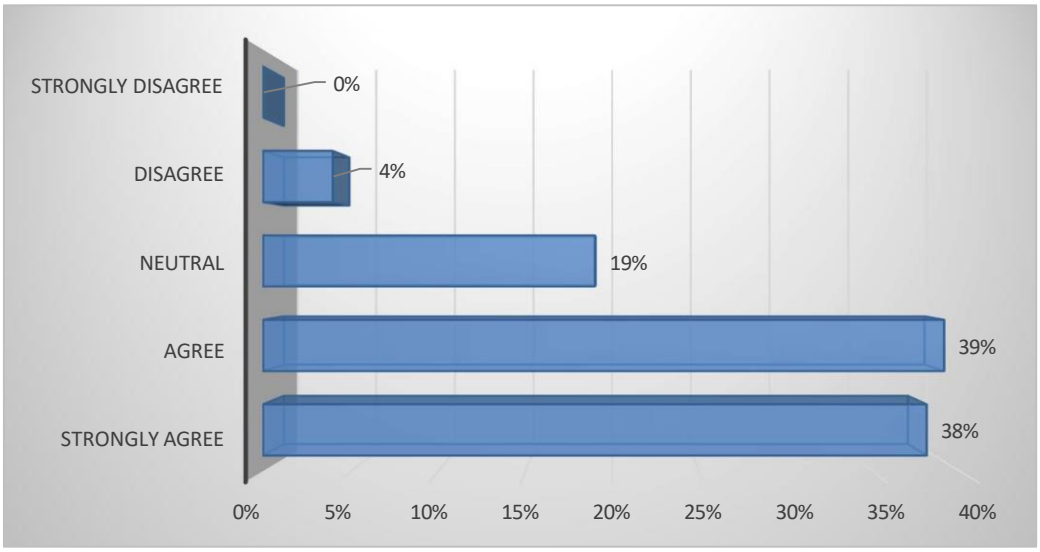

Figure 4.10: Dissemination of mission statement to stakeholders

The section below discusses whether the respondents believed that they own the CHIETA's vision and mission statement.

Question 12: Do stakeholders own the CHIETA Vision and Mission statement?

Vision and Mission statement

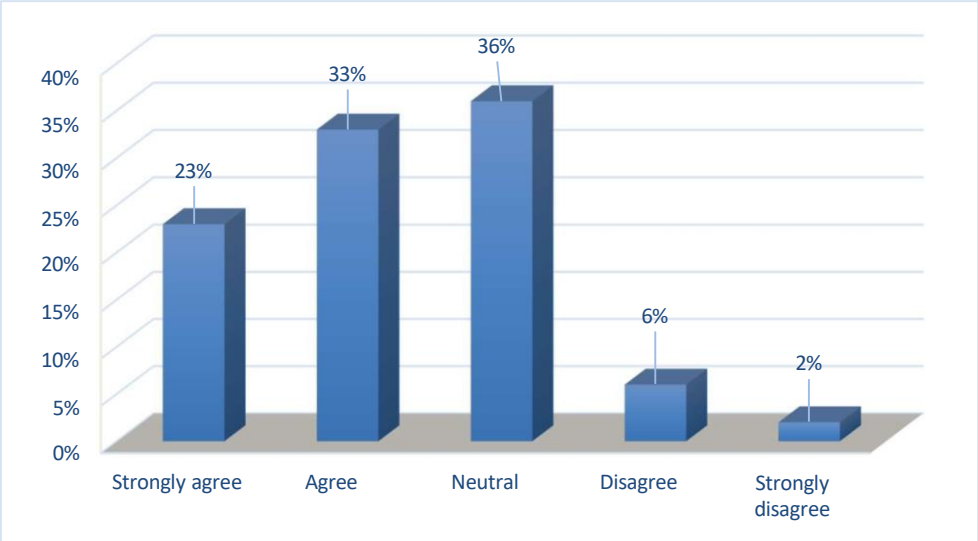

Figure 4.11: Ownership of the CHIETA's vision and mission statement by stakeholders

A feeling of ownership or disenfranchisement steers one to act, either in a positive or in a negative way. It is clear from Figure 4.11 above that a majority (56%) of the respondents felt that they owned the CHIETA's vision and mission statements. A significant 36% of the respondents was undecided. The responses to this question correlate with the responses to questions 8 and 9 on the vision and the mission, which confirms that the question was understood by the respondents. The above response shows that there is a feeling of ownership of the CHIETA's vision and mission statements. The strategic skills planning construct is discussed in the next section. The presentation format is as per previous sections, commencing with the quantitative analysis of the construct followed by a presentation of the individual questions making up the construct. This is concluded by a presentation of the dominant theme from the qualitative analysis of the same construct.

4.4 Strategic skills planning

Questions under this section investigated the strategic skills planning processes within the CHIETA and within its strategic skills stakeholder organisations. Figure 4.12 below shows that 56% of the respondents were of the opinion that the CHIETA practices

strategic skills planning, while 30% were unsure and 14% disagreed with this statement. The high number of undecided respondents should be a cause for concern to the CHIETA as these responses were from the stakeholders responsible for strategic skills planning or implementation. One possible reason could be the busy schedules of the strategic practitioners at their places of work.

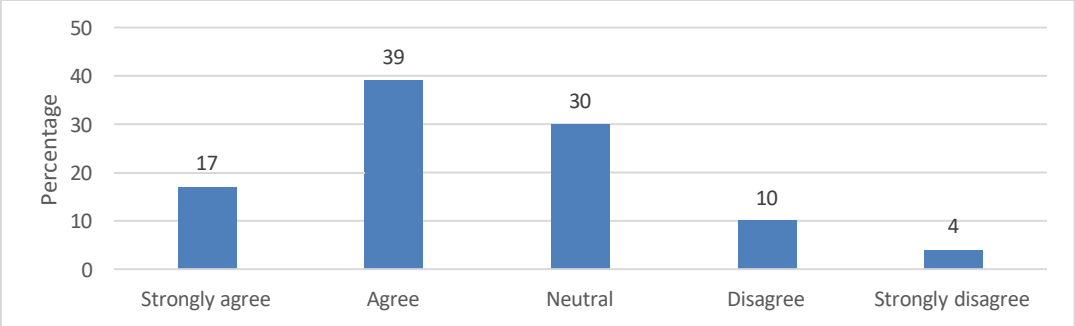

Figure 4.12: Respondents' opinions of whether the CHIETA practises strategic skills planning

The dominant theme that emerged under this construct confirmed that the CHIETA and its stakeholders practiced limited strategic skills planning. The reasons given by the interviewees were mostly related to the inadequacy of strategic skills data. Some of the interviewees believed that there were some companies which were too secretive about data relating to future skills demand. The logic behind this, is that holding on to such data gives them a competition edge. The implications of data limitations are that it inhibits the ability of the CHIETA to engage in meaningful and well-informed strategic skills planning leading to the CHIETA focusing more on generic and non-strategic skills.

Supporting this data thriftiness was Tino a CHIETA employee, who responded:

> ***The CHIETA companies in the same chamber are competitors and protection of trade secrets will always be there, hence, the need to focus on generic strategic skills. There is need to separate generic from strategic……. Focusing on individual company skills requirements can be detrimental if talking about skills at a sectoral level. Macro analysis is good enough for strategic skills planning.***

In an interview, a union representative who is also a chamber committee member expressed reservations regarding employer participation in strategic skills planning, saying:

> ***Companies submit WSPs and ATRs for only one reason which is mandatory grants financial incentives.***

There is lack of genuine interest in enhancing employee skills, making employees re-employable or creating opportunities for self-employment. The exercise is driven more by self- interest and not sectoral interest. A sizeable number of strategic skills stakeholders are only interested in getting the 20% mandatory grant funding by submitting WSPs or ATRs. What is also clear from these responses is that information is not readily available from the individual companies in the sector. Given the realities of competition, it is understandable that information is not freely available.

To provide clarity on the construct depicted in Figure 4.12 above, each of the questions constituting the strategic skills planning construct are analysed below. Before doing so, it is important to revisit chapter 2 to provide context, as to who is obliged to pay skills development levy. Based on the section above, it may be reasoned that in as much as levy payment is an obligation, participation in skills development remains voluntary. Some member companies view the skills development levy as a tax and hence cost of doing business. Out of a total of 2,719 CHIETA levy-paying companies, only 890 submitted WSPs and ATRs – a participation rate of 33% (CHIETA, 2019). Expressed differently, this is a non-participation rate of 67%. This figure is unacceptably high. The implications are that fewer member companies are participating, restricting employee worksites and slowing innovation in the chemical sector.

The voluntary nature of the strategic skills planning process and the non existence of selection criteria from representatives makes the next question key to understanding the first research objective.

Question 13: Do stakeholders understand the purpose of strategic skills planning?

An understanding of the purpose of strategic skills planning would mean that more companies would participate in the strategic skills ecosystem. That way, there would be higher learner enrolments, more employers would avail spaces for work placement opportunities, employers would encourage employees to acquire skills and remunerate them when they are off attending skills training. As shown in Figure 4.13 below, only 57% of the respondents stated that they understood the purpose of strategic skills planning, 30% were neutral, while 13% disagreed with the statement.

Purpose of Strategic skills planning

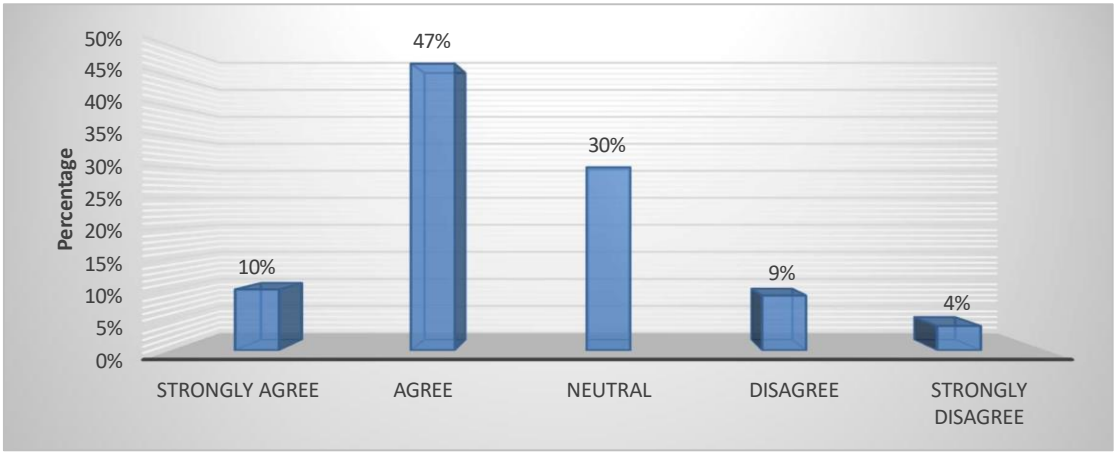

Figure 4.13: Stakeholder understanding of the purpose of strategic skills planning

Question 14: Are strategic skills planners knowledgeable about strategic planning and skills development?

This question sought to gauge stakeholder representatives' strategic skills knowledge. Strategic skills outcomes are a reflection of the knowledge and understanding of the committee members participating on the issue. Once this knowledge level is ascertained, the CHIETA would be able to develop an intervention strategy to address any identified gaps. Once all strategic skills committee members have a common understanding and are knowledgeable on strategic skills issues, they can add value to the process. This would enable the stakeholders to contribute meaningfully to the strategic skills agenda.

As shown in Figure 4.14, most (61%) of the respondents agreed that the strategic skills planners were well informed and knowledgeable about the strategic skills. A total of 29% of the participants were undecided and 10% disagreed.

However, based on the findings from the interviews, there seemed to be a contradiction. Some of the interviewees reasoned that the member company representatives at the different SETA structures lacked strategic skills knowledge.

A governing board member who is also in the executive concurred by stating that:

> ***… CHIETA not all members have strategic skills knowledge.***
>
> ***Strategic skills knowledge***

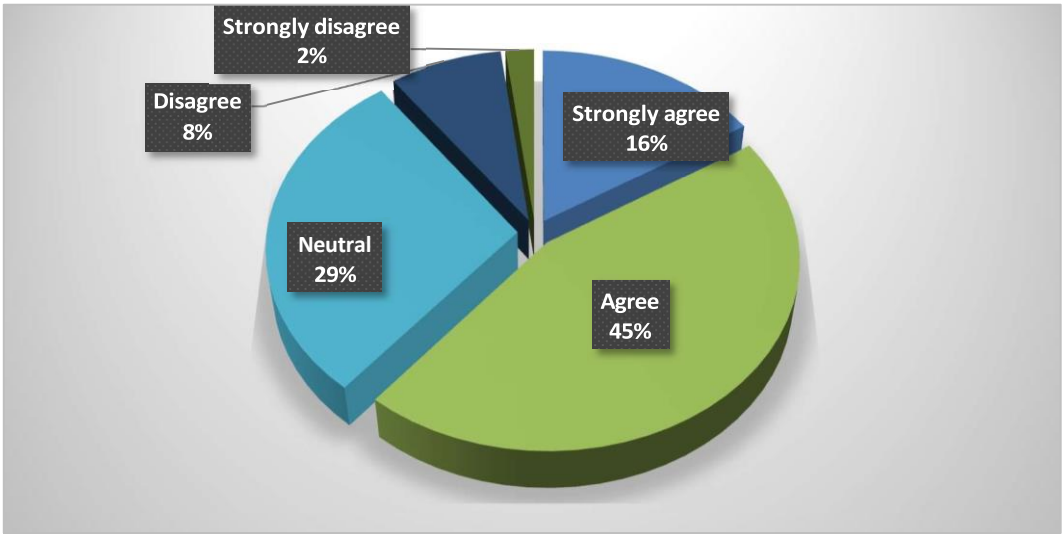

Figure 4.14: Strategic skills planners' knowledgeability about strategic skills

Gari, a CHIETA employee had the following to say in this regard:

> ***Companies are represented by HR officers, plant operators and SDFs even at board level. If the CHIETA is to be a leader in skills, stakeholder representation should be at the highest level from both industry and government.***

Concurring with the above assertion was a former CHIETA board chairperson who is now a union representative. He stressed that,

> ***Regulations should state that CEOs or their direct reports should sit on SETA boards. In my travel to Asia and Germany, very senior individuals represent their organisations and this makes the training authorities relevant …***

On labour representation, the former board chair had this to say:

> ***For continuity, unions should be represented by the education desk as opposed to union top leadership who are voted into political office; they are in office today and, come next AGM, they might be out of office. In the case of unions, institutional knowledge is lost when there is a change in representation. Those in union leadership do not account to their union membership, whereas if unions are represented by the education desk, those in leadership can hold their subordinates accountable.***

A CHIETA chamber chair who also served as a board member at one of the other SETAs went as far as suggesting the setting up of minimum qualifying criteria for nomination to any SETA structure, opining that this would translate to a higher quality of discussions that would translate into quality strategic skills input.

Chamu a CHIETA employee and board member reasoned that the practice where the SETA board chairpersons are "political appointees" leads to a politicisation of skills development. This was echoed by an industry representative who wished that the board chairpersons were senior people from the chemical sector. The logic was that if the CHIETA board chair was from the chemical industry, they are better placed to understand the skills dynamics within the sector unlike government appointees, who are usually outsiders and may be unfamiliar with the industry they lead.

An interesting response was obtained from one of the CHIETA employees Bester, who felt that being "strategic" does not equate to seniority but rather equates to being knowledgeable. She argued:

> ***The CHIETA has processes that ensure collection of timeous and quality strategic skills planning data. We talk at both macro and micro levels. Representation at the highest level does not really matter. These skills development facilitators and HRM officers are involved in skills in their respective organisations. The data the CHIETA gets from the companies plus additional research data and government information leads to a holistic input in strategic skills planning. The CHIETA engages in secondary research in the sector to verify and complement work skills plan information. In as much as skills development facilitators and HRM officers are not decision-makers, they are privy to organisational strategies.***

However, this finding was at odds with most of the interview responses. What is interesting though, is that this comment was made by a senior CHIETA executive. A possible explanation could have been that the executive was outlining an ideal situation rather than reality. It can reasonably be concluded that strategic stakeholders are knowledgeable to some extend on strategic skills.

The reason for the next question was to ascertain the level of inclusivity in the strategic skills planning process within the sector. Success of any strategic endeavour requires that all those affected should be included, this goes for the single organisation and critically, for strategic stakeholders. This question was important given the diverse and, at times, conflicting interests of the multiple strategic skills stakeholders. Figure 4.15 shows that the majority (62%) of the respondents agreed with the statement that the CHIETA's strategic planning process was all-inclusive. Of the balance, 28% were undecided and 10% of the interviewees disagreed with the statement.

Question 15: Is the strategic skills planning process an inclusive process?

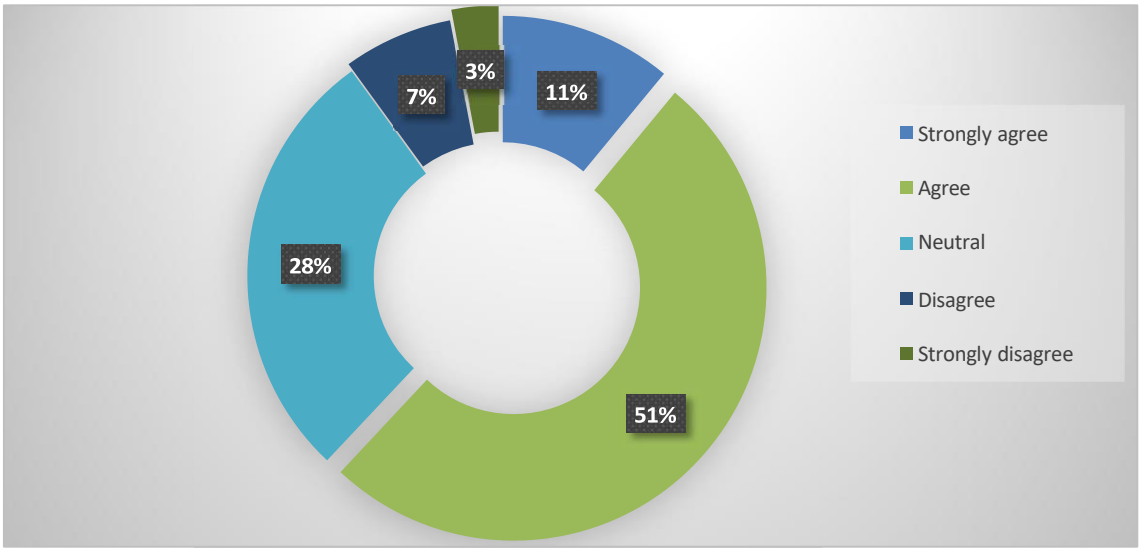

Figure 4.15: Inclusivity of the strategic planning process

Some of the interviewees were of the opinion that the strategic skills process was not all-inclusive. This, they argued, was because employer representatives dominated the skills value chain:

> ***Employers are responsible for everything from skills training committees and are responsible for all training, with limited or no input from unions. This is reflected in companies' failure to re-invest grants in training labour representatives, unions not signing work skills plans and ATRs and lack of low-level training for labour officials. This all points to power being in the hands of the employers.***

Not surprisingly, some industry representative expressed the opinion that the industry was marginalised by the DHET "government" and that this might be the reason behind

the employers' frustrations with strategic skills development. Though the process is inclusive, there is room for improvement.

The section below addresses the question of middle managers being appointed as strategic skills planning champions.

Most (59%) of the participants were of the view that middle managers were appointed as champions to monitor strategic areas, 23% were undecided, while 18% disagreed (see Figure 4.16).
Some of the interview responses contradicted this finding, as they believed no champions were appointed to take charge of key strategic areas. The implications are that there will be no one to introduce, promote, sustain or motivate subordinates as well as to guide and ensure that an initiative remains top priority.

Question 16: Are middle managers appointed as strategic planning champions in the key strategic areas?

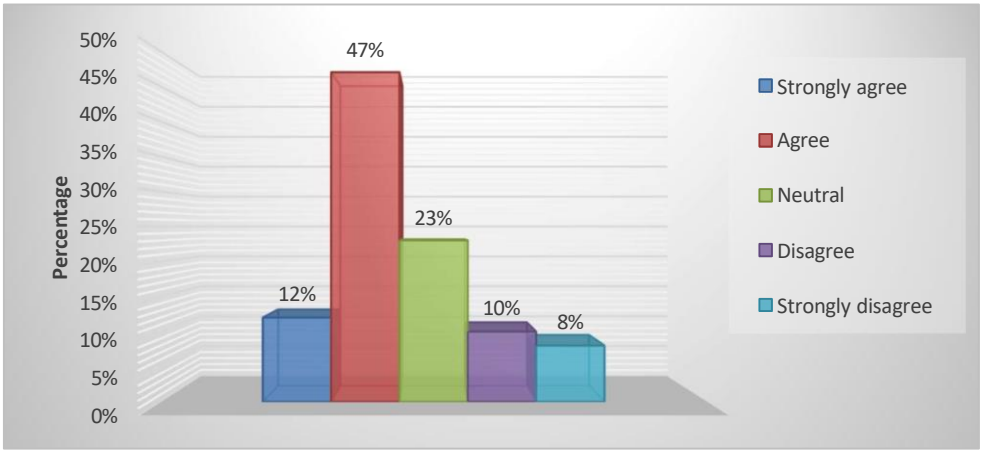

Figure 4.16: Appointment of middle managers as champions to advance key strategic areas

Understanding the environment is key to addressing relevancy of the developed and offered skills and qualifications.

Question 17: Does your organisation perform comprehensive environmental scanning for strategic skills planning?

This question sought to ascertain the level to which the CHIETA and its strategic skills stakeholders performed environmental scanning to inform strategic skills planning. The results are as depicted in Figure 4.17 below.

Exactly half (50%) of the respondents were convinced that the CHIETA and its stakeholders do environmental scanning for purposes of strategic planning, while 28% were not sure and 22% disagreed with that statement. The implications are that skills programs development might be irrelevant.

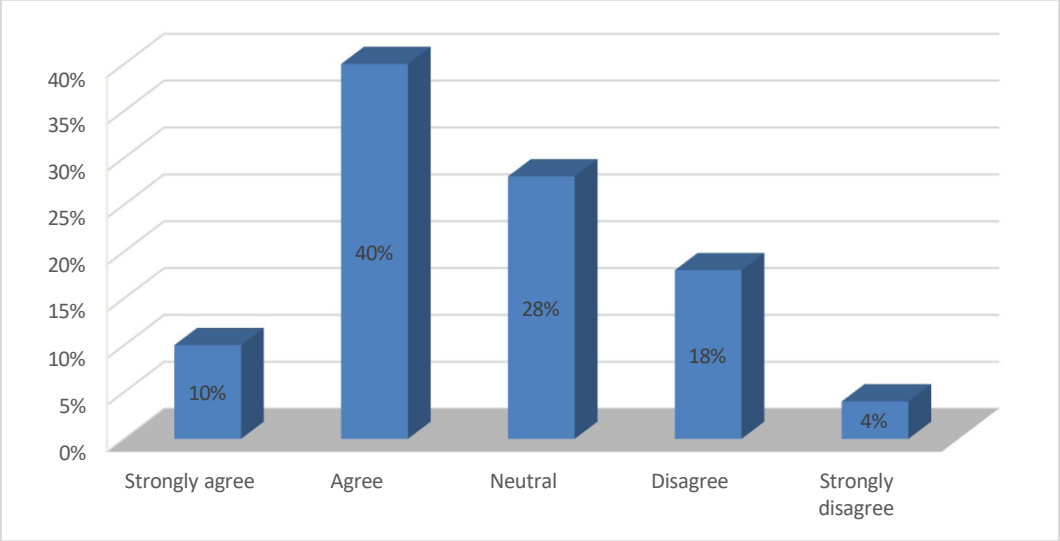

Figure 4.17: Environmental scanning in strategic planning

Some interviewees reasoned that the nature of the CHIETA made it too rigid and numbers-driven, thus paying little attention to the industry's skills needs, in terms of both quality and relevancy. A CHIETA employee, Magudumana said:

The CHIETA is too rigid in its approach to skills and too compliance oriented.

The following two questions were drafted for purposes of better understanding question 17 above, on comprehending the environment.

As mentioned above, understanding the environment assists the CHIETA in crafting strategic skills that address identified needs. The first of these questions sought to ascertain the extent to which the CHIETA applied skills demand drivers in strategic skills planning to ensure relevancy of the developed qualifications.

Question 18: Do strategic skills practitioners use skills demand drivers in strategic skills planning?

As shown in Figure 4.18, a total of 63% of the participants were of the view that strategic skills planning was informed by skills demand drivers, 25% were not sure, while 12% disagreed. The implication of this is that the developed skills or qualifications may not be informed by industry demand. This will be a waste of resources.

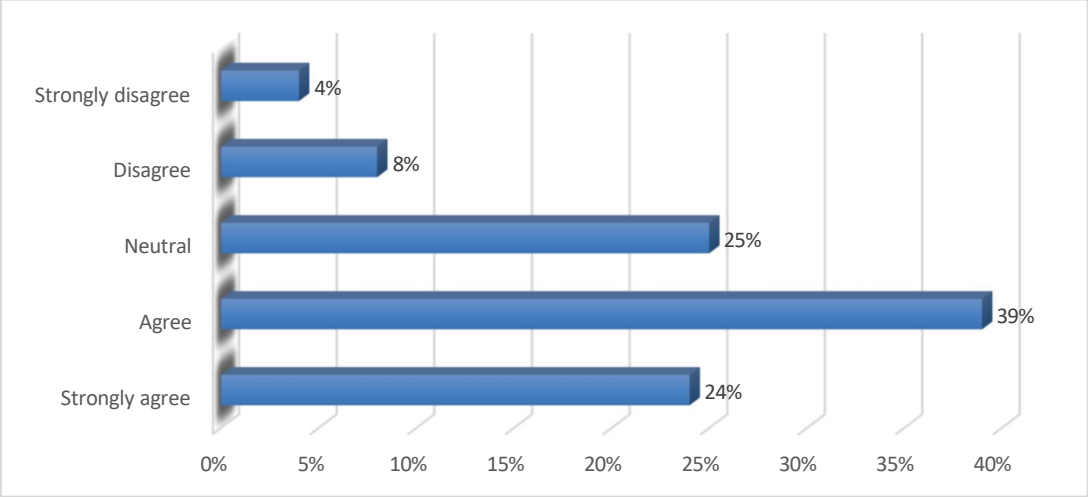

Figure 4.18: Usage of skills demand drivers in strategic skills planning

In addition to question 18 above, question 19 was also developed to understand the skills environment and hence the responses were expected to correlate.

Question 19: Do strategic skills practitioners consider emerging and productive

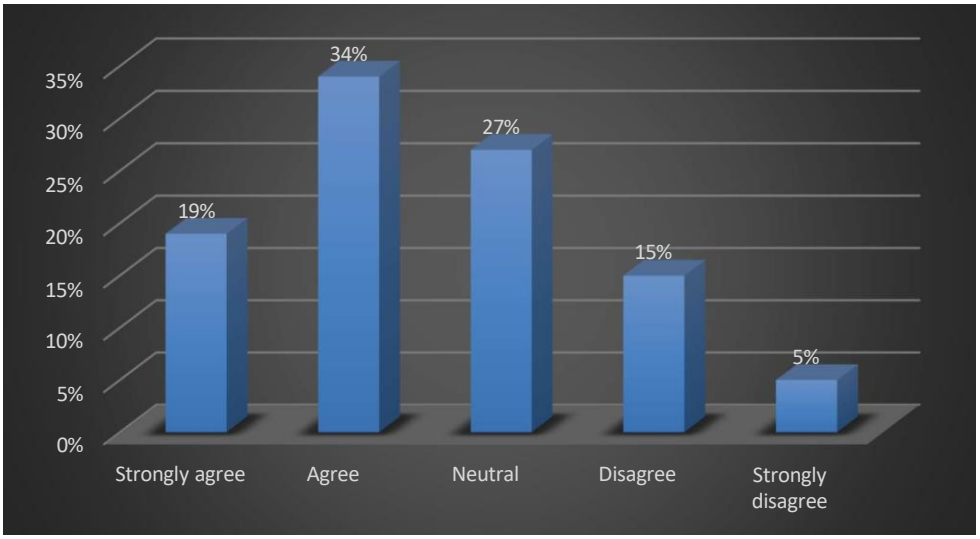

Figure 4.19: Consideration of emerging and productive sectors by the CHIETA for strategic skills

As Figure 4.19 shows, slightly over half (53%) of the respondents believed the CHIETA targeted emerging and productive sectors of the economy in strategic skills planning, 27% were neutral and 20% disagreed. The finding correlates with the findings to question 17 but not with question 18, which might point to participants' lack of understanding of question 18.

Responses from interviews were largely in the negative. Some of the respondents reasoned that the non-flexibility of the qualifications was indicative of an organisation that is steeped in its ways. This possibly points to the uncoordinated approach to strategic skills planning.

One of the chamber chairs in an interview responded:

> ***The skills supplied are not the ones required by industry. The CHIETA is slow in responding to skills demands. Furthermore, there are issues of quality and delays in relation to the qualification and learnership registration processes.***

Given these responses, one may conclude that the industry does not fully consider emerging and productive sectors in strategic skills planning. This could be because the analysis of emerging sector skills requires scientific research tools, which might not be readily available.

There were mixed responses to the question on whether justice was done to strategic skills planning.

Few participants were not sure or neutral.

Among those that thought the CHIETA did not do justice to strategic skills planning were a former governing board member and union member who said:

> ***CHIETA does not do justice to strategic skills planning. There is an over reliance on WSP data and industry experts are excluded in strategic skills planning.***

A governing board member and an executive also concurred by saying:

> ***Some companies are secretive and strategic about their skills and training. Training offered by the CHIETA is not strategic, the programmes offered are mostly generic. More focused research could assist in the identification of strategic skills.***

Another governing board member and executive also said:

> ***Justice is not done to the process. The CHIETA is number focused and not interested in quality.***

A former board chairperson was also of the opinion that the CHIETA did not do justice to strategic skills planning:

> ***CHIETA relies heavily on WSPs, and the exclusion of industry professional experts means the process is not comprehensive.***

A skills development provider stated that:

> ***CHIETA is number and target-oriented. There are bigger projects of a strategic nature being run and funded by companies while the CHIETA refuses to support them because they are numbers driven.***

In the same vein, an employer had the following to say:

> ***... in terms of the SSP, the CHIETA sets targets, and this is all about numbers and not quality. The CHIETA does not have criteria for quality neither can they explain the impact on the workplace.***

However, some participants felt that the CHIETA did justice to strategic skills planning.

A CHIETA employee, Jacob said:

> ***CHIETA does justice to the process. The non-representation at the highest level is of no consequence since the SDFs are involved in skills development. SDFs are sufficiently capacitated to participate meaningfully. In as much as SDFs aren't decision-makers, they are privy to organisational strategies and that they provided valuable information for planning purposes. Data obtained from companies and the additional research data obtained by the CHIETA leads to a holistic input in skills planning. Checks and balances are there to ensure quality information and that secondary research is done into the sector to verify and compliment WSPs information. Competitors and trade secrets would always be there, hence the need to focus on generic skills. There is a need to separate these from innovative skills, which are company-specific, a focus on micro-skills could be detrimental where one is talking about skills at a sectoral level.***

A former governing board and union member also felt that the CHIETA does justice to strategic skills planning by saying:

> ***CHIETA does justice to the process. However, there is need for a strong management information system for data analysis for purposes of creating a credible sector skills plan since the quality of data affects the quality of the SSP. Companies do not want to share skills data in critical areas as this would destroy their competitive edge.***

A skills development practitioner agreed:

> ***CHIETA does justice to the process as regulated by the SDLA. However, CHIETA does not use industry experts and does not work with other research centres.***

Similarly, a company representative responded as below:

> ***CHIETA does justice to strategic skills planning because it makes full use of the data available from levy and non-levy paying companies in the country.***

Tindo, a CHIETA employee said:

> ***Justice is done to the process since decisions are through consensus.***

Another CHIETA employee, Chamu added:

> ***CHIETA does justice to strategic skills planning and this is through interactions with Skills Development Committees which are made up of member companies.***

A CHIETA staff member, Dumi responded as stated below:

> ***CHIETA does justice to strategic skills planning, CHIETA has a rigorous research methodology and a strict SLA regime.***

An employer also concurred by saying:

> ***Justice is done because the different companies are represented in the various chambers and board committees.***

Following are some interview responses to the question on whether the skills offered by the CHIETA were in sync with industry requirements.

A former governing board member and union member felt that the CHIETA skills development programmes are in sync with industry:

> ***There is a large industry uptake. The CHIETA receives in excess of R3 billion in Discretionary Grants skills applications, this means the programs are relevant. The CHIETA needs to beef up on the skills programs creating a path way to full qualifications progressing from NQF1 to NQF10. Operator to an engineer through different paths, even from RPL. He argued for learnerships as they have been able to create employment; 70% to 80% of learners are getting employment.***

One participant agreed, but had some reservations.

Chamu a CHIETA employee said:

> ***Since the programmes and qualifications are requested by industry, it indicates their relevance. However, there are challenges in terms of qualification registrations with the QCTO which takes anything from 3 years or more.***

A skills development practitioner added:

> ***A few of the skills were in sync though a majority of them were not. Some employers go for unaccredited programmes because those are the skills they want. The CHIETA refuses to fund them because they are not accredited.***

A skills development practitioner said:

> ***Skills programmes and learnerships, chemical operations and manufacturing are the only ones we have. Better analysis of WSP is required. This would inform programmes to be funded. Low skills are over-supplied, and companies need soft skills and 4th industrial revolution qualifications. Skills being offered are irrelevant.***

Another skills development practitioner stated the below:

> ***Skills are not in sync and skills development appeared to be somewhat of a quick fix: knee-jerk reactive approach.***

An employer also added:

> ***CHIETA skills programmes are not in sync with industry. CHIETA simply goes through the motions of survival without much attention to creative adaptation to industry requirements.***

The researcher wanted to assess the extent to which the CHIETA utilised its collective intelligence since this creates competitive advantage.

Question 20: Does the CHIETA transform collective intelligence into institutional intelligence through strategic dialogue?

From Figure 4.20 below, a mere 48% of the participants agreed to this statement, while 31% were neutral and 21% disagreed. This finding points to a near absence of a knowledge base within the CHIETA. The implications are that the CHIETA fails to capitalise on its institutional intelligence capabilities.

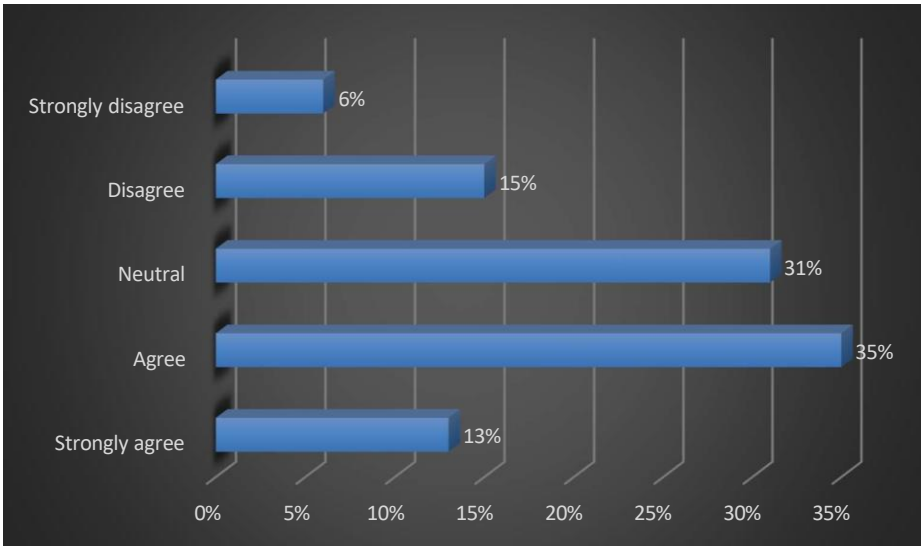

Figure 4.20: Transformation of collective intelligence into institutional intelligence through strategic dialogue

Below are the interview responses on whether the CHIETA practises skills scenario planning. Most of the participants were of the opinion that the CHIETA does practise skills scenario planning. Only a few felt that the CHIETA did not practise skills scenario planning.

Those who agreed that the CHIETA does practise skills scenario planning include a governing board member and an executive who said:

> ***CHIETA does scenario skills planning through chamber projects and each chamber has a project that they must work on annually.***

A chamber chairperson and employer representative also said:

> ***CHIETA does scenario skills planning through the different chambers.***

A labour representative and former executive added:

> ***This is done through the IRR, and it was started about two years ago.***

Mish a CHIETA employee had this to say:

> ***CHIETA does scenario skills planning. This is mainly driven by stakeholders and companies.***

Simon another CHIETA employee agreed:

> ***This is done through interventions such as research, for example, the Chemical Seta is conducting research around possible future skills in the chemical sector with the 4th industrial revolution and green skills as change drivers in order to adequately prepare for future skills requirements.***

Agreeing to this was Charity, a CHIETA employee who said:

> ***The CHIETA does not do skills scenario planning. For example, the late catchup on the 4th industrial revolution at the CHIETA. What compounded the poor scenario planning was the long time it took, (up to three years) to have training programmes accredited and by that time, the nature of the job would have changed.***

Following are some interview responses to the questions on skills that are in sync with the industry requirements.

A former governing board member and union member felt the CHIETA skills development programmes are in sync with the industry:

> ***There is a large industry uptake. CHIETA received in excess of R3 billion for Discretionary Grants skills applications, it means they are relevant. The combination of work and theory adds value. There is however a need for these to lead to full qualifications, not a one-year learnership. Additionally, skills programmes should be seen as part of long-life learning and creation of a mobility path linked to a full qualification moving from NQF1 to NQF10; operator to an engineer through different paths, even from RPL. … learnerships … have been able to create employment; 70% to 80% of learners are getting employment.***

The other participants agreed, but they had reservations.

A regional manager, for example, agreed with some reservations:

> ***Since the programmes and qualifications are requested by industry, it indicates their relevance. However, there are challenges in terms of qualification registrations with the QCTO which takes up to 3 or more years.***

A skills development practitioner added:

> ***A few of the skills were in sync though a majority of them were not. Some employers go for unaccredited programmes because those are the skills they want. The CHIETA refuses to fund them because they are not accredited.***

A governing board member and executive agreed but expressed their scepticism:

> ***CHIETA skills development programmes are in sync with industry. However, in most cases, learners do not progress beyond level 1. CHIETA must not put too much focus on skills programmes which do not offer room for development and progression. Level 1 qualifications do not empower employees.***

However, some participants thought that the CHIETA skills development programmes were not in sync with the industry. One labour representative and former executive said:

> ***CHIETA qualifications are out of sync with industry.***

A skills development practitioner added:

> ***Skills programmes and learnerships, chemical operations and manufacturing are the only programmes we have. Better analysis of WSP is required. This would inform programmes to be funded. Low skills are over-supplied, and companies need soft skills and 4th industrial revolution qualifications. Skills being offered are irrelevant.***

Another skills development practitioner said:

> ***Skills are not in sync and skills development appeared to be somewhat of a quick fix: knee-jerk reactive approach.***

An employer also added:

> ***CHIETA skills programmes are not in sync ... CHIETA simply goes through the motions of survival without much attention to creative adaptation to industry requirements.***

The following question sought to confirm the relevance of the strategic skills training programs by assessing the level of customer involvement in the CHIETA's strategic skills planning process as a measure.

Question 21: Are the CHIETA strategic skills solutions customer-centred?

Customer involvement in strategic skills development brings relevancy to the strategic skills developed. As per Figure 4.21, just above half of the participants (54%) agreed, 31% were undecided and 15% disagreed with the statement that the CHIETA's strategic skills solutions were customer centred. The implication of non-customer involvement in strategic skills planning is that scarce resources might be wasted on developing programmes that are not required by the sector and thus which do not assist graduates in securing employment.

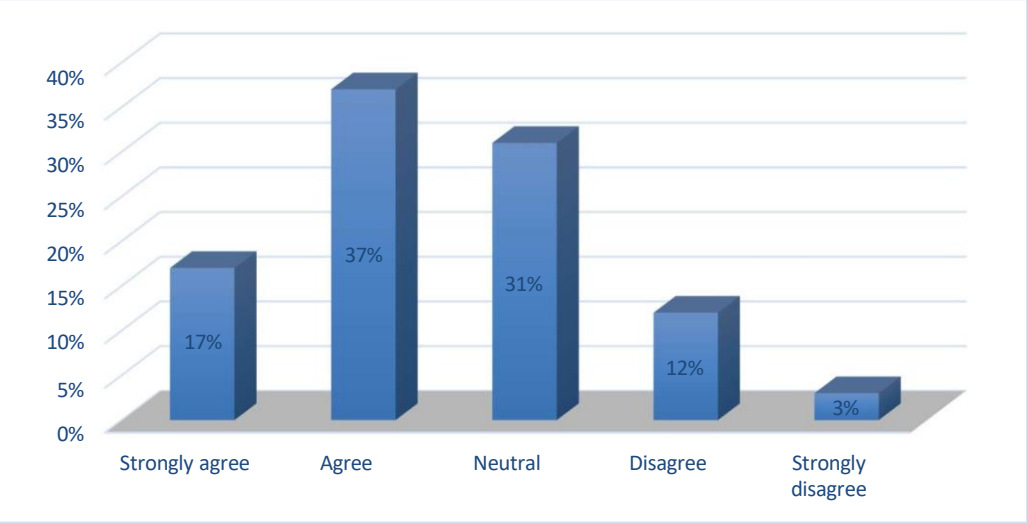

Figure 4.21: Customer-centeredness and the incorporation of desired outcomes in strategic skills solutions

Some of the interviewees reasoned that the CHIETA was rather inflexible, bureaucratic as well as non-responsive to customer requirements.

Emphasising inflexibility, Gari, a CHIETA employer said the following:

> ***Some companies are self-financing their employees to attend strategic skills programmes which the CHIETA would have rejected grant funding because the programmes are not NQF aligned. Companies end up funding these programmes because as far as they are concerned, the skills are both strategic and critical.***

An example provided by Gari, a CHIETA employee for non-customer centredness was where the CHIETA rejected funding a single project application that met three CHIETA defined qualifying criteria. The project was rural based, targeted at disabled learners and would use green energy. The irony is that the CHIETA had identified rural communities, green energy and learners with disabilities as individual priority projects, but when a single proposal that met all these desired criteria was submitted, the CHIETA declined to fund it.

This demonstrates lack of customer centricity and non-alignment between project funding and resource allocation. It further amplifies the existence of silos and and absence of synergies between business units. Another example provided was a case where the CHIETA rejected funding of a six-sigma project.

Six-sigma is a structured way of solving recurring business problems. It enables companies to address business process problems, and this leads to significant cost reduction and better human resource utilisation (Laureani & Antony, 2019). Cost reduction contributes to higher profit margins. The training in six-sigma would have added to the organisation's bottom line.

A former CHIETA manager who is now an independent skills development practitioner said:

> ***The past years have seen the CHIETA simply go through the motions of survival without much attention to creative adaptation to industry requirements.***

An employer representative and chamber chairperson responded:

> ***There is a disjuncture between the skills offered at TVETs and other skills development providers and those which industry needs.***

Enhancing processes and systems requires that an appraisal of the current position be ascertained. Once this is done, the gap between the current position and the desired state known and plans may be developed to reach that desired state. This was the reason for the next question.

Question 22: Does the CHIETA measure predetermined indicators in strategic planning?

There was an affirmative response of slightly over half (54%), with 38% respondents being indifferent and 8% in disagreement to the statement that strategic planning involved a measurement of pre-determined indicators. One gets the impression that, though pre-determined indicators are measured, it is not done in all cases. The implications are that the CHIETA might not be aware of its achievements and therefore its impact on strategic skills delivery. Such a position has the potential to distort resource allocation prioritisation.

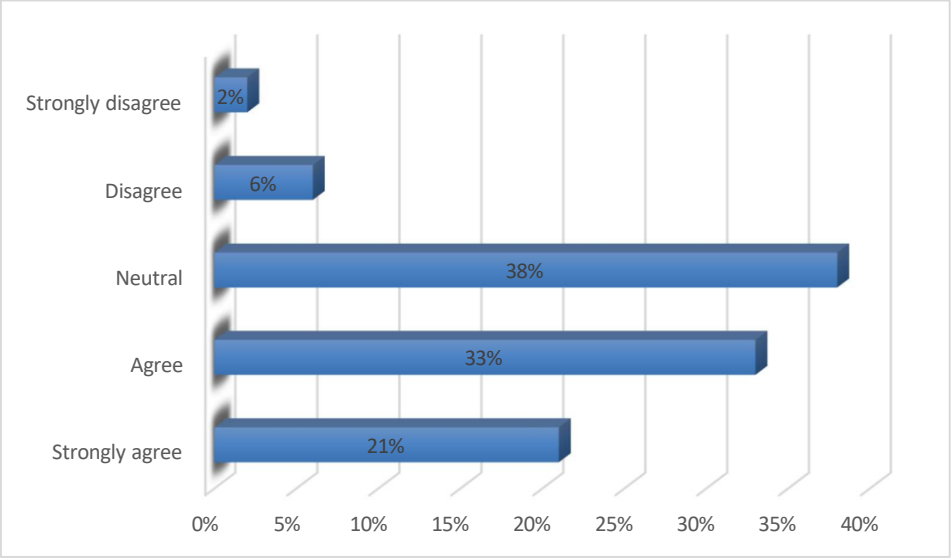

Figure 4.22: Measurement of pre-determined indicators in strategic planning

Resources are not infinite and as such, they should be allocated based on some principle, usually on strategic priority. It was therefore important to ascertain whether this was the practice at the CHIETA and its stakeholder companies. This is discussed next.

Question 23: Are resources allocated for strategic skills planning?

As shown in Figure 4.23, a total of 59% of the respondents were of the impression that resources are made available for strategic skills planning, while 30% were undecided. A few (11%) disagreed. The implications of this finding are that there might be a resource allocation and strategic skills priority misalignment. Under such circumstances, areas that require resources could be neglected at the expense of those that are not in need. Ultimately, the CHIETA and its stakeholders may fail to deliver on strategic skills objectives.

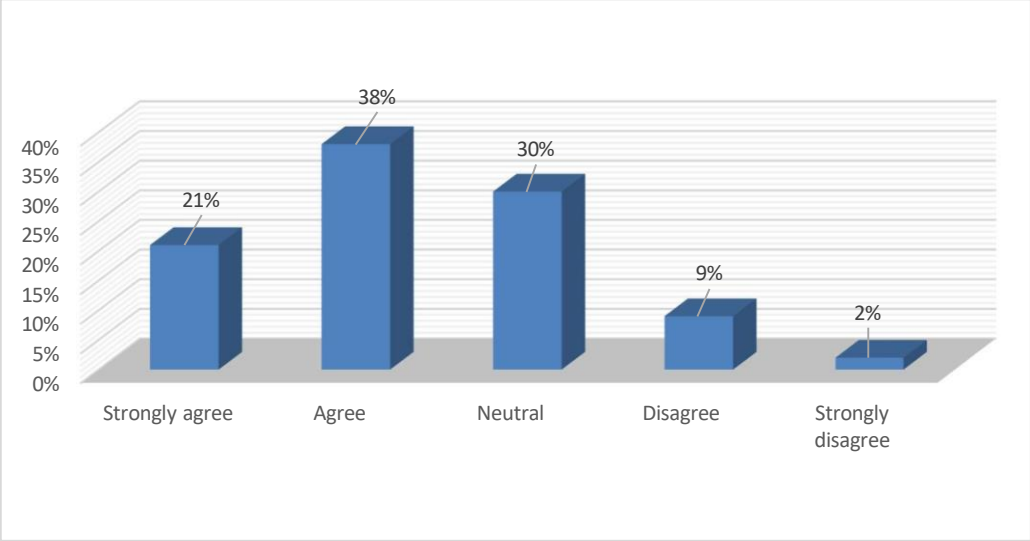

Figure 4.23: Consideration of strategic skills planning in resource allocation

Linking strategic skills planning to other critical organisational processes is a recipe for organisation success. This enables maximization of synergies and exploitation of opportunities. Example of such processes is human resource recruitment and remuneration, resource allocation linked to research priorities, reporting and technology management. The following question sought to address this linkage.

Question 24: Is there a link between strategic skills planning and the other organisational processes?

As shown in Figure 4.24 below, 56% of the participants agreed, 33% were neutral while 11% disagreed to the statement that strategic planning was linked to other critical management organisational processes.

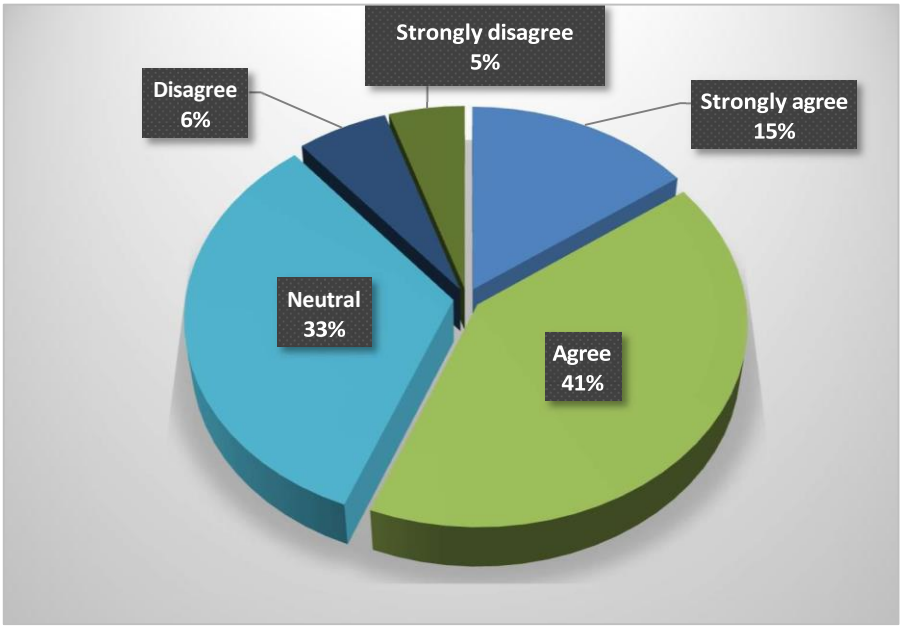

Figure 4.24: Existence of a link between strategic planning and other critical management organisational processes

A management information system is one such key function that should link critical management organisational processes. This is discussed next.

From an interview with Hongu, one of the CHIETA employees, the response was that strategic skills planning required a strong Management Information System (MIS) capable of processing collected data.

A senior executive further reasoned that the MIS needed to be supplemented by a capable research resource:

> ***For the CHIETA to be the skills authority it must be knowledgeable and have the capacity to run a credible learning management information infrastructure. Getting accurate data direct from stakeholder HR systems is key to both sectoral and national strategic skills planning data integrity and does not allow for data manipulation.***

He further advocated *for* data integration between the CHIETA, the government departments, such as SARS, the public tertiary institutions, Statistics South Africa and other SETAs:

> ***Each of these institutions invests in their own databases leading to fragmentation and duplication in both infrastructure and cost.***

Data and information sharing would enable the CHIETA and other SETAs to track employee movements and provide the necessary assistance.

A board member highlighted disjuncture between research, grants funding, ETQA, monitoring and evaluation within the CHIETA. The implications are that strategic skills planning activities of the CHIETA, and its stakeholders might lead to suboptimum results.

Clear coordinated communication is one of the critical factors for strategic skills planning success. This is covered in the next section.

Question 25: Is strategic communication consistent, transparent and is it done through multiple channels?

In response to this question, 53% of the participants thought that strategic communication was consistent, as well as transparent and that it was done via multiple channels, whilst 31% were undecided and 16% disagreed.

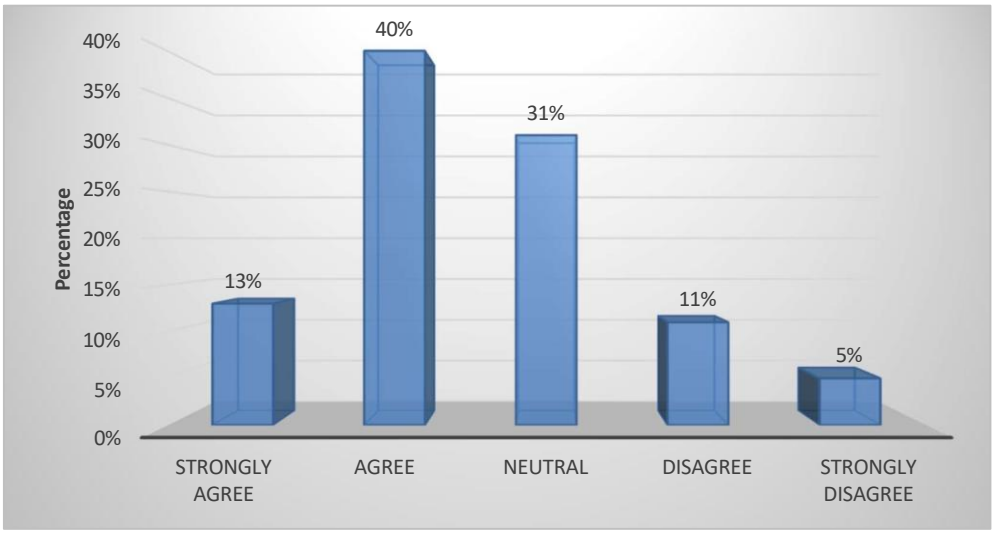

Figure 3.25: CHIETA communication strategy

The responses from interviews were contradicting this finding, with most of the participants pointing to lack of a strategic skills planning communication strategy. This was despite the CHIETA holding two regional skills forums and a research colloquium annually, these forums are open to all strategic skills company representatives. The implications are that, though the CHIETA is investing heavily in skills forums and research colloquiums, these efforts might be addressed at the wrong target market.

Organisations should be receptive to criticism and diverging opinions, this is the discussion in the next section.

***Question 26: Does the* CHIETA's culture allow for the emergence of key strategic concerns?**

Of the respondents, only 47% were of the view that the CHIETA's organisational culture allows for key strategic concerns to emerge and gain formal recognition, 35% were undecided and 18% were in disagreement with this statement. A less than 50% positive response should be a concern to the CHIETA as it means the culture is intolerant of diverse views and thus it is inhibitive. The implications are that stakeholders could be reluctant to participate in strategic skills development discussions, much to the detriment of the organisation's vision .

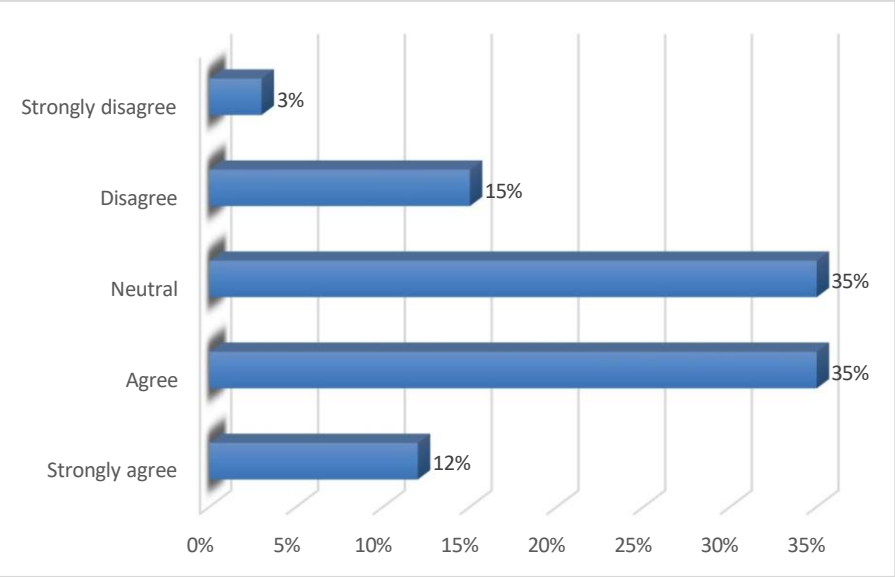

Figure 4.26: Organisational culture and the emergence of key strategic concerns

Modern and progressive organisations learn from the best in the industry including competitors. Benchmarking is the process where organisations measure themselves against the best. This is the subject of discussion in the following section.

Question 27: Does your company benchmark strategic planning?

From Figure 4.27 below, it can be observed that 52% of the respondents agreed with the statement that strategic planning includes benchmarking and learning from other organisations' good practice, while 33% were neutral and 15% disagreed.

The implication of this finding is that the CHIETA and its chemical industry stakeholder companies might not be learning from leaders in the sector and thus operating in silos. This leads to cost duplication, as well as time and resource wastage.

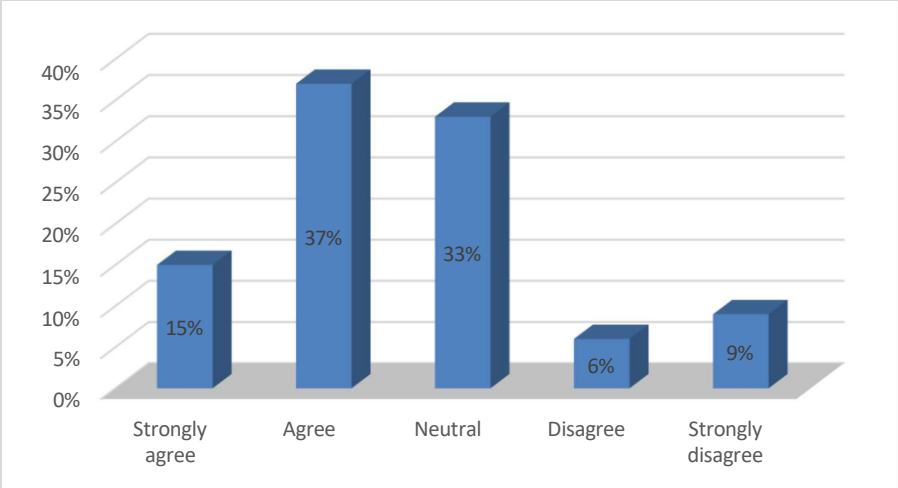

Figure 4.27: Inclusion of benchmarking from other organisations' good practice

The next question is on whether employees are held accountable for poor strategic choices.

Question 28: Are the CHIETA employees held accountable for their poor strategic choices?

The finding as depicted in Figure 4.28 shows that only 41% of the respondents were of the opinion that there was accountability for poor strategic choices, 34% were not sure, while 25% disagreed with this statement. The implication of this finding is that a perceived lack of accountability for poor performance leads to the employees not taking responsibility in strategic skills planning initiatives.

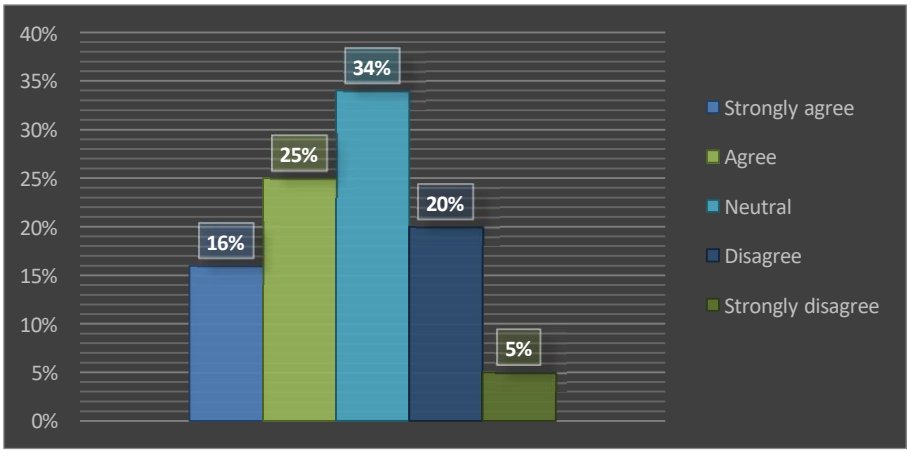

Figure 4.28: Employee accountability for poor strategic planning choices

In most organisations, strategic skills planners and implementers are usually different people. It is an organisation's leadership's responsibility to ensure that the recommended strategic skills plan is implementable. This is covered in the next section.

Question 29: Is strategic implementation incorporated in strategic skills planning?

As Figure 4.29 shows, 51% of the participants believed that strategic implementation was incorporated in the strategic planning process, 34% were indifferent, while 15% disagreed. Where strategic implementation is not incorporated in strategy planning, this might present challenges in terms of implementation feasibility.

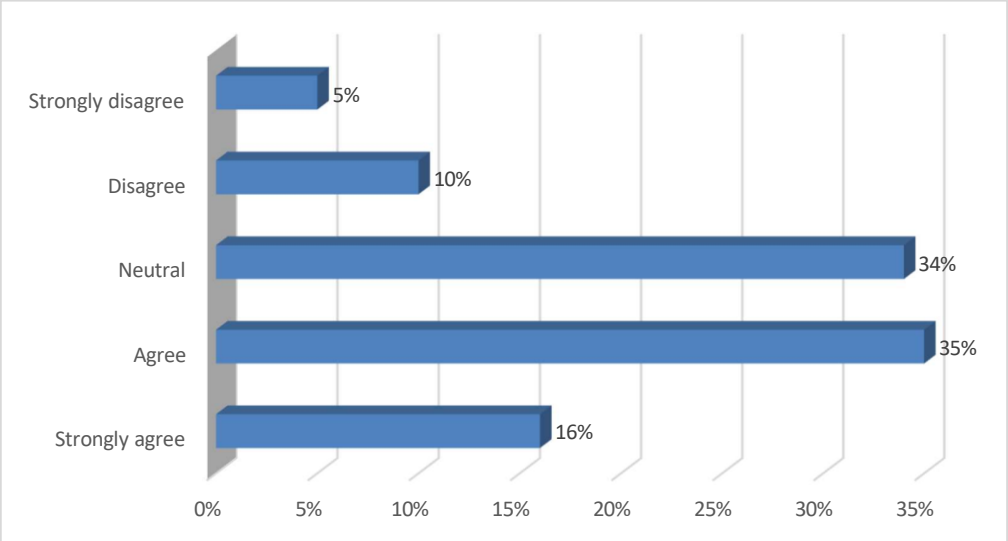

Figure 4.29: Incorporation of strategic implementation in the strategic planning process

An industry representative commented in an interview that industry experts were not always involved in the CHIETA strategic skills planning processes as some chambers did whilst some did not. The implication of this finding is that recommended strategic skills planning may lack feasibility and practicality because of the partial involvement of industry experts.

The section below deals with scenario planning in strategic skills.

Question 30: Does the chemical industry apply scenario planning in strategic skills planning?

As can be seen from Figure 4.30; 54% of the respondents agreed that the CHIETA did strategic skills scenario planning, while 33% were neutral and 13% disagreed. The implications are that the chemical industry is not fully in a position to capitalise on jobs for the future.

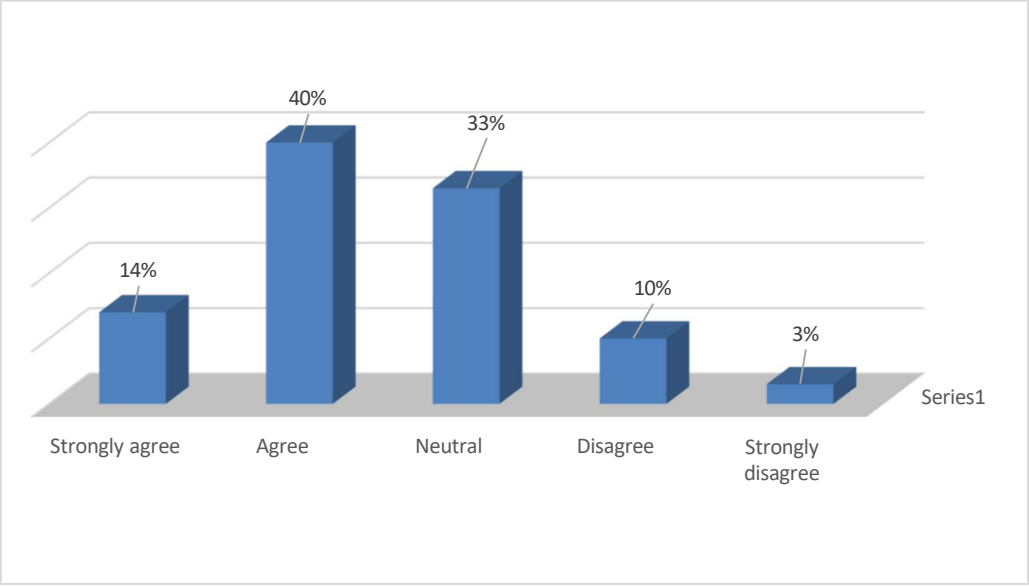

Figure 4.30: Consideration of scenario skills planning in strategic skills

Below is a presentation of the interview responses on the same question with an added element of futuristic skills planning. A former senior CHIETA manager (now a skills development practitioner) believed strongly that the CHIETA did not do futuristic job planning and described the entity thus:

> ***They are like a square peg in a round hole; the CHIETA planning is sterile and not good enough.***

Another skills development practitioner echoed the same sentiments:

> ***The CHIETA is not able to provide a sustainable reputable, innovative and constructive input into the country's industrial planning, which is particularly focused on the current or pending challenges posed by the challenges in human resource development.***

A senior company representative reasoned that the futuristic strategic skills planning required much more data than what was currently available to the CHIETA. In support of this argument, a CHIETA research specialist reasoned:

> ***The 4th industrial revolution is our current challenge. Had the CHIETA been practising futuristic skills planning, this work would have commenced long back.***

The finding is that futuristic skills planning planning was done to some extent. The implication is that the likelihood of developing relevant and in demand strategic skills is remote.

Social acceptance of institutions, professions and or trades play an important role in determining the ability of those professions or trades to recruit learners, this will be discussed below.

Question 31: What is the social image of vocational education and training institutions?

Most of the respondents (59%) felt that the social image of vocational education and training institutions was positive, while 28% were neutral and 13% disagreed.

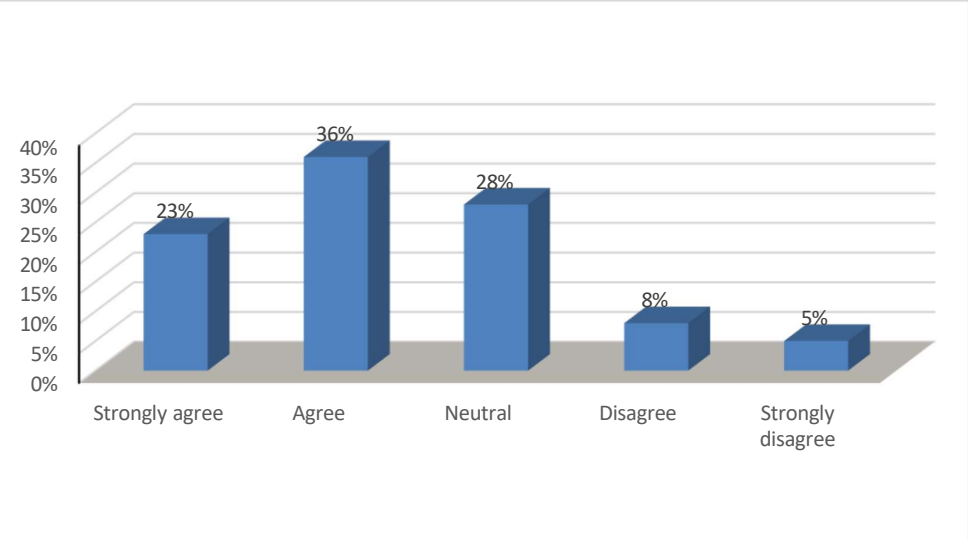

Figure 4.31: Social image of vocational education and training institutions

From the conducted interviews, some of the reasons provided for the scorn were the poor state of public vocational institutions, outdated equipment as well as bad reputation within industry. Others reasoned that, historically, these institutions are considered as third-class falling after universities and technikons. The implications are that vocational educational and training institutions might have a difficult time recruiting learners for some qualifications or trades as society's view of these institutions is a factor with regards to learnership recruitment efforts.

Question 32: What is the effect of skills training on employment and earning potential?

As can be seen from Figure 4.32, a majority (67%) of the respondents were of the belief that training improves both employment and earning potential, 24% were undecided and 9% disagreed.

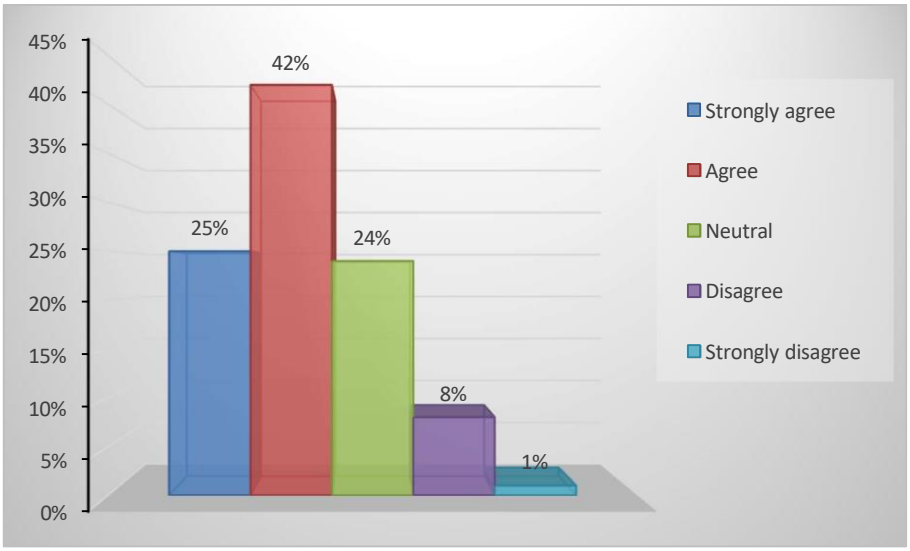

Figure 4.32: Effect of skills training on employment and earning potential

The above findings should be viewed in light of contradictory responses from some of the interviewees.

A senior company representative said:

> ***The CHIETA is planning and implementing training interventions that do not contribute to succession planning, promotions or employment. The CHIETA is training for the sake of training and such training is of no value to either the employer or the learner but to the skills development practitioners.***

An analysis of the interview responses casts doubt as to whether there is tangible return on strategic skills planning. This might explain why employed and unemployed learners are not too keen to enroll for training because there is no prospect of securing employment. Similarly, for those already in employment, there is no guarantee that acquisition of these qualifications or the skills will enhance their earning or promotion prospects.

The following question attempted to ascertain whether the curricula included soft and cross-cutting programmes.

Question 33: Does the CHIETA's skills curricula incorporate soft and cross-cutting skills in the training programmes?

Most (65%) of the respondents were of the view that the training programmes incorporate soft and cross-cutting skills, 22% were neutral, while 13% disagreed. However interviewees were clear that there were no soft and cross-cutting programmes offered.

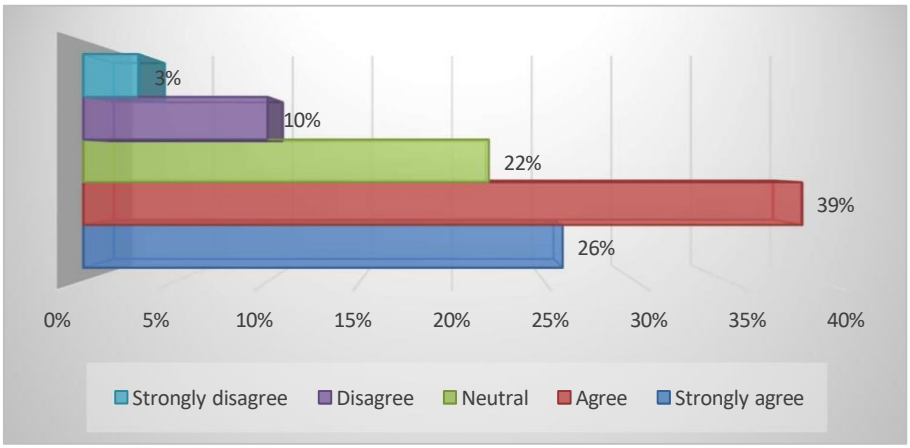

Figure 4.33: Incorporation of technical and cross-cutting skills into skills programmes

Asked the same question, an interviewee, Jonso, who is a CHIETA employee expressed the view that the DHET's philosophy needs to change:

> ***As a SETA, we have no choice but to comply with what the department of higher education and training demands. The emphasised focus is too much on compliance and not on addressing company needs.***
>
> ***Companies are not central to skills planning strategy. There is no question about who should take the lead in strategic skills planning.***

The implication of this finding is that the CHIETA learners are not well equipped to function in a modern demanding economy. Some of these include communication, computer literacy and self-expression.

Question 34: Is there a multi-partnership mechanism to ensure quality training and learning infrastructure?

More than half (55%) of the respondents agreed, while 30% were neutral and 15% disagreed with the statement that multi-partnership mechanisms existed to ensure

quality training and learning infrastructure. The existence of multi-partnerships presents options to strategic skills planners as each focuses on that which they excel in. It can be concluded that multi-partnership mechanisms do exist, though to a limited extent. The implication of this finding is that the CHIETA skills value chain might not be fully exploiting opportunities by not focusing on their competencies.

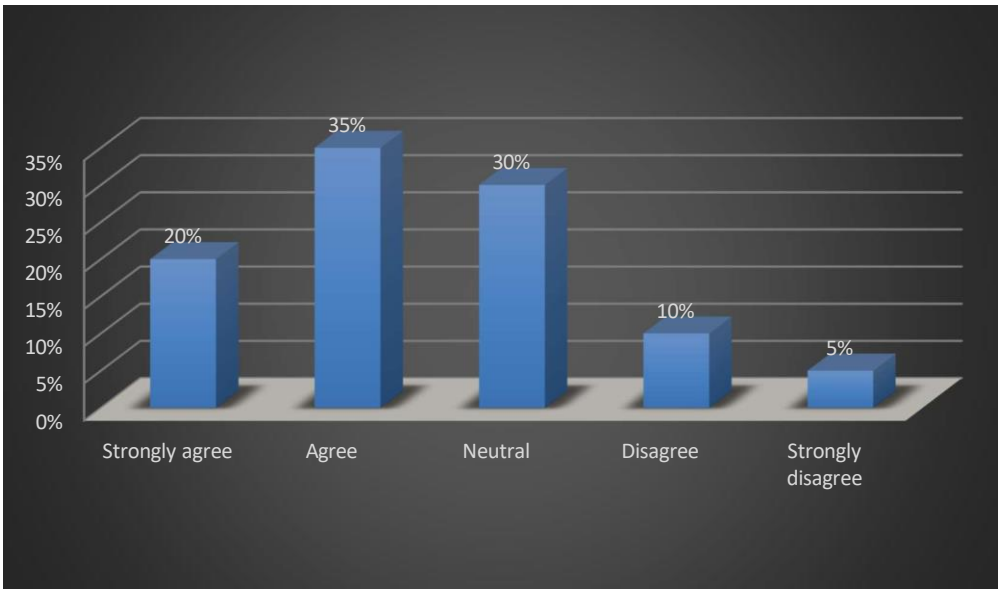

Figure 4.34: Existence of multi-partnership mechanisms to ensure quality training and learning infrastructure

Traditionally, skills and qualification offerings have been in the main formal, requiring physical attendance, and in most cases, this is still the only method offered by skills development practitioners. This is usually constraining both in terms of time and cost. This will be discussed next.

Question 35: Are there mechanisms to recognise different and progressive skills acquisition pathways?

As shown in Figure 4.35, 55% of the respondents agreed that there were mechanisms to recognise different and progressive skills acquisition pathways, 33% were undecided and 12% disagreed with this assertion.

A CHIETA board member commented:

> ***Employees should be able to move from operator to engineer through different paths including Recognition of Prior Learning. This is not possible under the current system.***

The implication of this finding is that absence of options slows employee development leaving them frustrated.

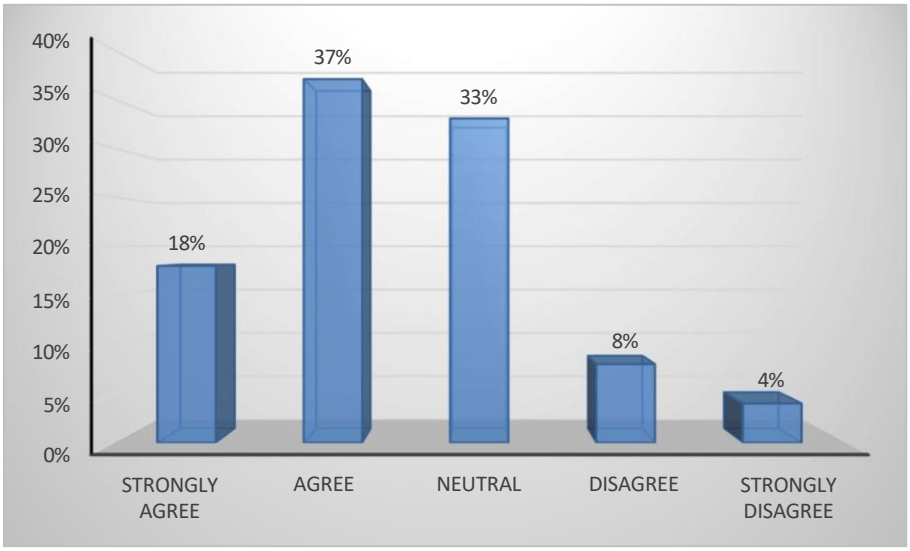

Figure 4.35: Existence of mechanisms to recognise different and progressive skills acquisition pathways

Question 36: Does the CHIETA have a learner tracking mechanism?

As can be seen in Figure 4.36, 62% agreed, 26% were not sure and 12% disagreed to the statement that a learner tracking mechanism existed.

The objective was to understand whether the CHIETA is aware of where their learners are, the absorption rate of the unemployed or the progression of those already in employment. This is important for the provision of learner support, mentorship and development. Additionally, this provides an opportunity to identify those skills or trades which are in demand and thus inform strategic skills planning. The implication of this finding is that the CHIETA, by not having full information on tracking, lacks sufficient data that could be utilised for strategic skills planning.

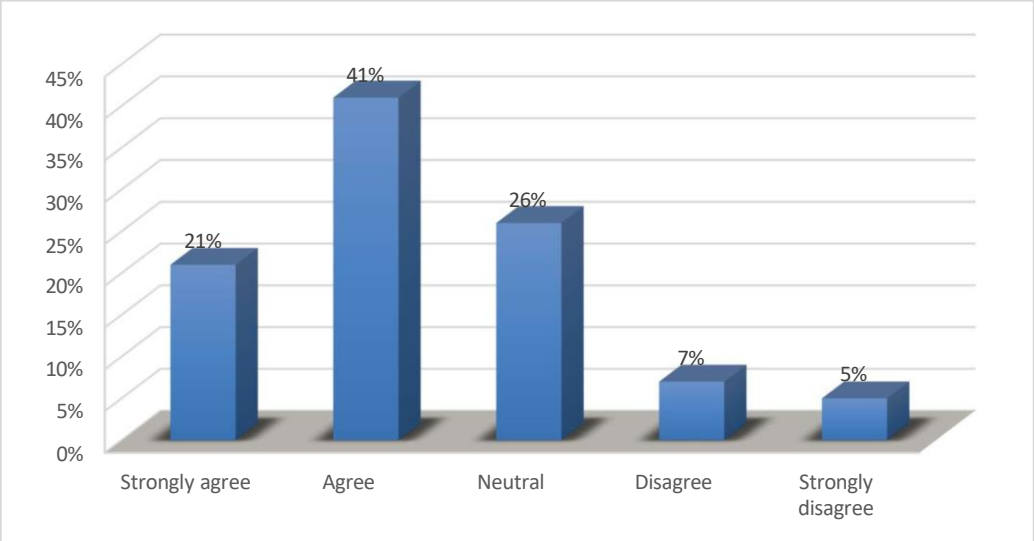

Figure 4.36: Existence of a learner tracking mechanism for support, development and mentorship

Strategic skills planning is not without its challenges. This is discussed below.

4.5 Strategic skills planning challenges

A senior CHIETA executive and board member identified the brain-drain of qualified and experienced CHIETA staff owing to the limited 5-year SETA life span as a major challenge. This brings instability through lack of continuity. It should be mentioned that though this was correct at the time interviews were held, facts have since changed. In September 2019, the DHET extended the life span of the SETAs and hence all the non-executive CHIETA staff were extended to 2030, which is an extension of 10 years. It is also noteworthy that all the executive management employment contracts were only extended by five years. As of August 2019, this finding implied that the CHIETA was losing talent to organisations that offered job security, this currently holds true only for executive managers and the CEO.

A contentious challenge was the up skilling of the current crop of employees. Some employers mentioned that retaining staff after they attain advanced skills was a challenge as they became highly mobile searching for competitive remuneration. Another challenge was that some chambers did not involve industry experts in strategic skills planning.

Highlighting the mismatch between the offered skills and industry skills needs, a CHIETA staff member, Mish said:

There is a disjuncture between what institutions produce and what industry needs. There is an ageing workforce and a lack of coaches and mentors for new entrants. TVETs are not producing the relevant skills required by industry.

A governing board member and executive concurred:

CHIETA fails to identify the correct skills required by industry. There is a high level of bureaucracy involved in SDP accreditation and lack of retraining retrenched workers.

Another governing board member and executive also agreed:

There is low industry participation maybe arising from the fact that the skills process is not driven by industry. The level of industry representation is too low, and the majority are SDFs.

Reinforcing this view, Precious, a CHIETA employee postulated that:

There is structural unemployment as a result of a mismatch of skills and demand. The other issue is the need of managing graduate expectations and work ethic.

In support of this fact, a labour representative and former executive also said:

There is a mismatch between industry skills needs and the TVETS output and as a result, industry will not recruit these learners. Additionally, industry ends up importing skills. ROI on training is not immediate and work readiness isn't a component of the training programmes.

Stressing the need for demand-driven skills development, Bester, an employee added:

CHIETA has a silo mentality and is haphazard in the way it delivers on skills. CHIETA needs to identify skills requirements for the next 5 to 10 years. There should be demand-driven skills development.

Insufficient funding was highlighted as one of the factors that impedes strategic skills development. A former board member stated that,

…skills development funding is low ….

Reinforcing this view, a regional manager mentioned that:

TVETs lack infrastructure and are not adequately funded, and this is reflected in the output of these institutions.

Dumi, a CHIETA employee, concurred by mentioning the following factors as challenges to strategic skills development:

…a lack of sufficient data for analysis, lack of research capacity as well as lack of funding and labour market constraints.

A former board chairperson mentioned lack of participation from the industry by saying:

Employer participation rate is low. With few companies, it is impossible to meet the SLA targets. Another issue is the quality of the programmes on offer.

Reinforcing this view, a former governing board member and union member added;

Another challenge is the non-participation of industry in skills development at TVETs especially in lecturer development.

Charity, a CHIETA employee also added:

There is lack of commitment from some member company representatives on contributing to building of overall skills labour base. Some companies are looking at their own individual skills needs, not national imperatives.

Globalisation has reduced product and service life cycles; innovation has become essential for business survival. This is covered in the next section. The presentation follows the same format as the preceding section on strategic planning, it commences with a presentation of the construct, which is followed by responses to each question under the construct. This in turn is followed by qualitative analysis where available.

Question 37: Does the CHIETA practice strategic skills innovation?

4.6 Strategic skills innovation

4.6.1 Practice of strategic skills innovation in the industry

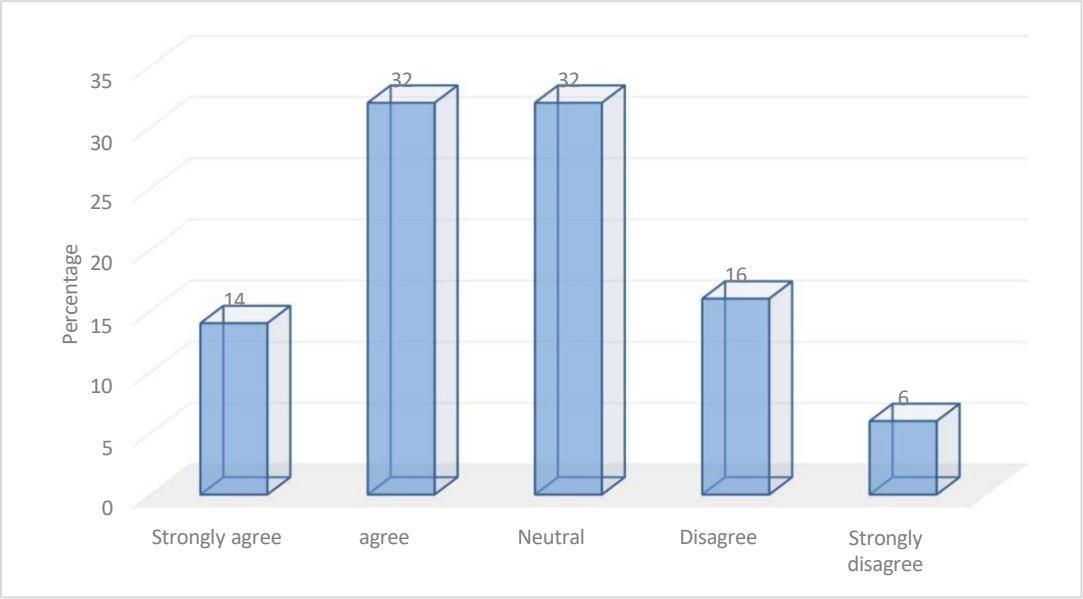

Figure 4.37: Practice of strategic skills innovation within the chemical sector

From Figure 4.37 above it can be seen that (46%) of the respondents were of the opinion that their employing organisations practice innovation, 32% were undecided with 22% in disagreement with the statement. Interview responses strongly correlate with survey responses. Though the CHIETA and its strategic skills stakeholders practice strategic skills innovation, the level was too low and thus negligible. The implication of this finding is that the chemical sector lags in strategic skills innovation.

Innovation is influenced by organisational as well as managerial factors. Organisational factors are discussed below.

4.6.2 Organisational factors

Question 38: Are the chemical industry organisations' processes flexible?

Organisational flexibility adds to agility, which is critical to innovation. Figure 4.38 shows that 52% of the respondents agreed, while 30% were neutral and 18% disagreed with the statement that the CHIETA was flexible.

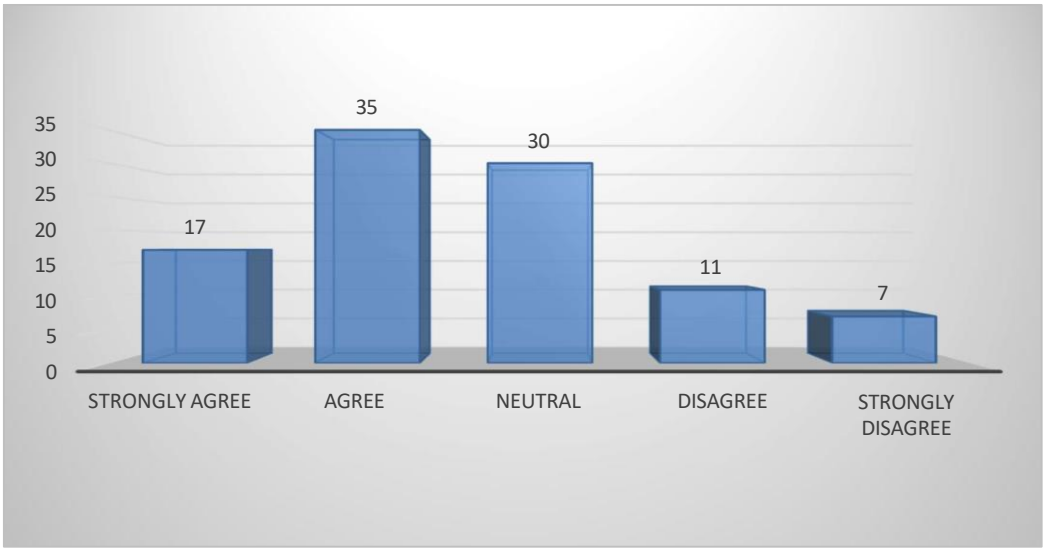

Figure 4.38: Organisational flexibility

A former CHIETA senior manager who is now a skills development practitioner and a chamber member commented:

> ***The CHIETA is slow in responding to changes, if at all.***

He went on to say that, in his opinion, the CHIETA is not interested in innovation because of the time and costs that are involved as well as the complexity of measuring innovation. An employer representative commented that the CHIETA had a low-risk appetite, and it was not willing to experiment with new ideas. He went on to say:

> ***The centralisation by the DHET, National Treasury and the QCTO has brought all SETAs under a central policy framework of control. The centralisation of policy has stunted the flow of decision-making within the CHIETA, which historically acted as an independent unit. This central control has brought about a notion that compliance is all that matters. Decision making has become less assertive and is based on the possible outcome of the next compliance audit.***

This finding points to the CHIETA being inflexible. The implications are that the environment is not conducive to innovation.

The following question is closely related to question 38 and it was expected to correlate. Organisational design has an effect on innovation. This is discussed in the next section.

Question 39: Is your organisation designed for innovation?

In response to the question of whether the CHIETA's and the stakeholder companies were designed for innovation, the responses as displayed in Figure 4.39 show that only 46% of the participants believed they were, while 28% were neutral and 26% disagreed. The response was marginally lower than the responses from question 38 (52%), which is understandable given that organisational design and flexibility are closely related.

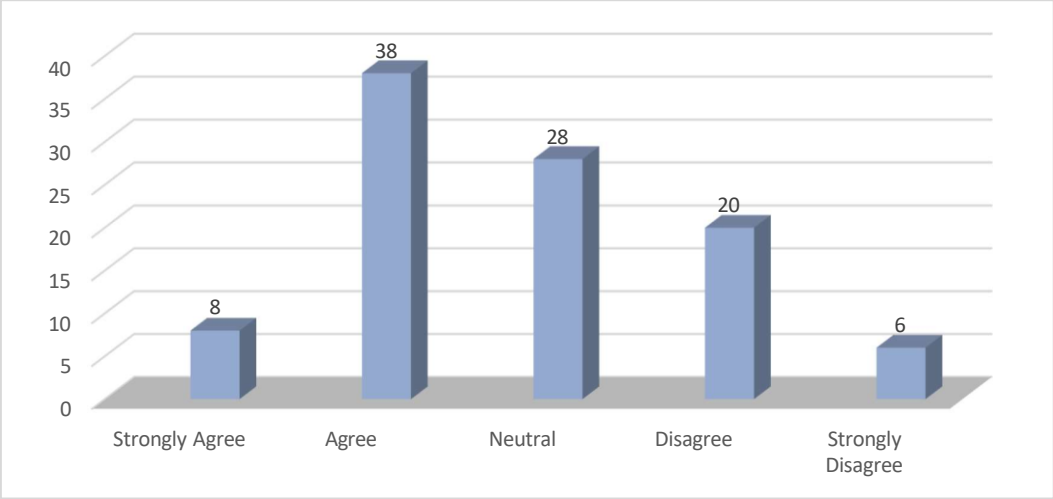

Figure 4.39: Organisational design and innovation

The implication of this finding is that the CHIETA and its strategic stakeholder companies are in the main not designed for innovation. This explains the slow pace to innovation.

The following question was a follow-up to question 39 above. The rate at which an organisation develops new products is a measure of how innovative it is.

Question 40: Does the CHIETA regularly develop new training products?

Participants were asked whether the CHIETA regularly develops new training products. Less than half of the respondents (41%) agreed, and 35% were undecided while about one quarter (24%) disagreed. The general perception is that the CHIETA does not regularly develop new training products. This correlates with responses to question 39, about the CHIETA not being designed for innovation where the affirmative response was only 46%. The implications are that the sector lags in offering relevant strategic skills.

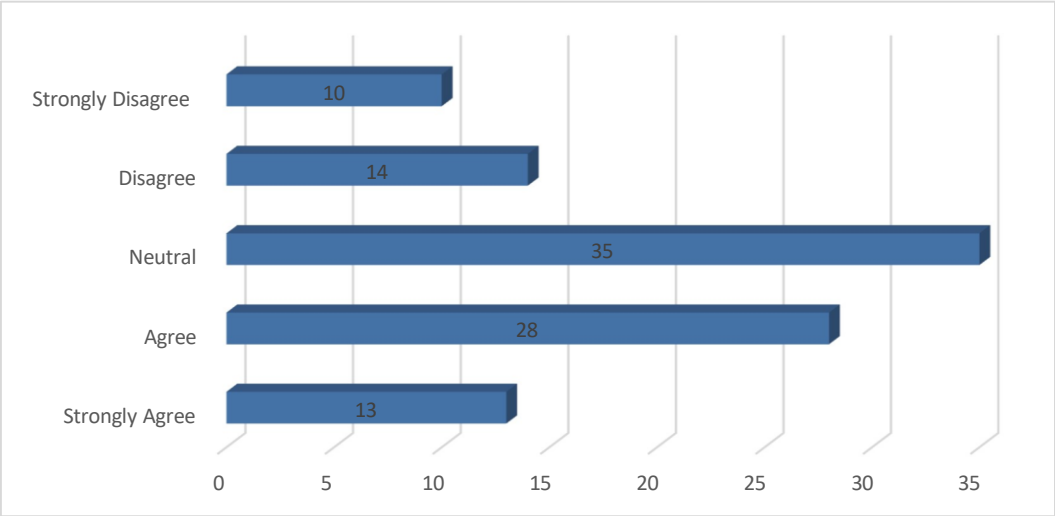

Figure 4.40: New training product development

An organisation's culture plays an important role in innovation, as it can be either encouraging or inhibitive. This is discussed below.

Question 41: Does the CHIETA and its stakeholders have an innovative culture?

Figure 4.41 shows that (48%) of the participants were in disagreement and 37% were undecided.Very few respondents (15%) agreed that the CHIETA and its stakeholders have an innovative culture. The implications are that the CHIETA and its strategic skills stakeholder companies exhibit limited innovative cultures.

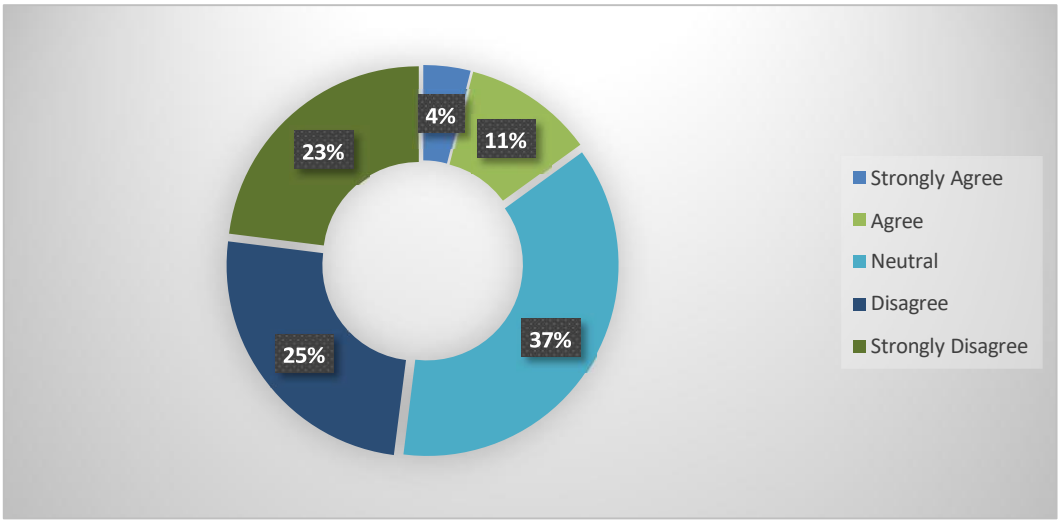

Figure 4.41: Existence of innovative culture

The section below discusses involvement of senior management in innovation.

Question 42: Is senior management involved in strategic skills innovation?

The responses to the question of whether the CHIETA and the chemical industry stakeholders' senior management were involved in innovative initiatives indicate that only 51% agreed, 34% were undecided and 15% disagreed. That just over half of the respondents feel that senior management is involved in strategic skills innovation points to a lacklustre organisational approach to innovation from the CHIETA and its strategic skills stakeholder organisations. The implications are that employees lack motivation as there are no innovation motivators and champions.

4.6.3 Managerial factors

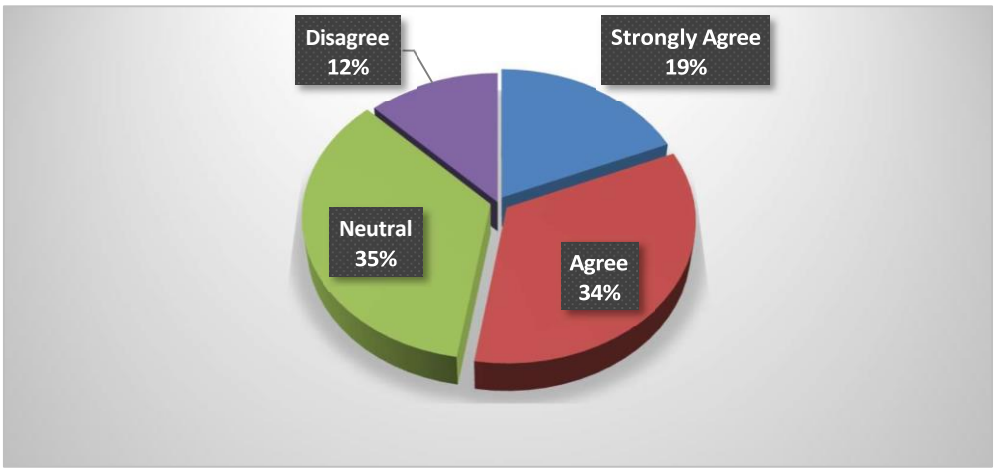

Figure 4.42: Senior management's involvement in strategic skills innovation

Question 43: Do middle managers act as strategic skills innovation sponsors?

Figure 4.43 shows that less than half (48%) agreed, 35% were indecisive and 17% disagreed to the statement that middle managers were appointed as strategic skills innovation sponsors. The appointment of middle management encourages and motivates followers to rally behind an initiative. Initiative sustainability is dependent on degree of sponsorship.

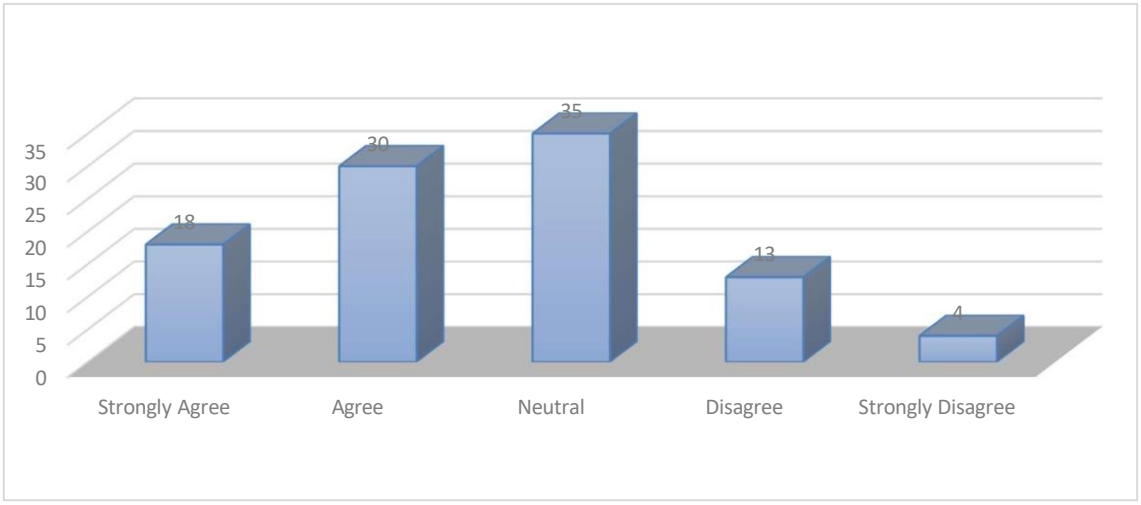

Figure 4.43: Involvement of middle management as strategic initiative sponsors

Knowledge sharing is discussed below.

Question 44: Do managers and employees in the chemical industry share innovation experience?

It is important that employees and management across business units share product and/or service experiences. Of the respondents, only 38% were in agreement while 37% were undecided and 25% were in disagreement with the fact that different units and management layers share innovative experiences. The implications of these findings are that the different divisions might be working on innovation initiatives independently of each other and as a result innovation is suboptimized, adoption delayed and costs are duplicated. Experience sharing expedites adoption process.

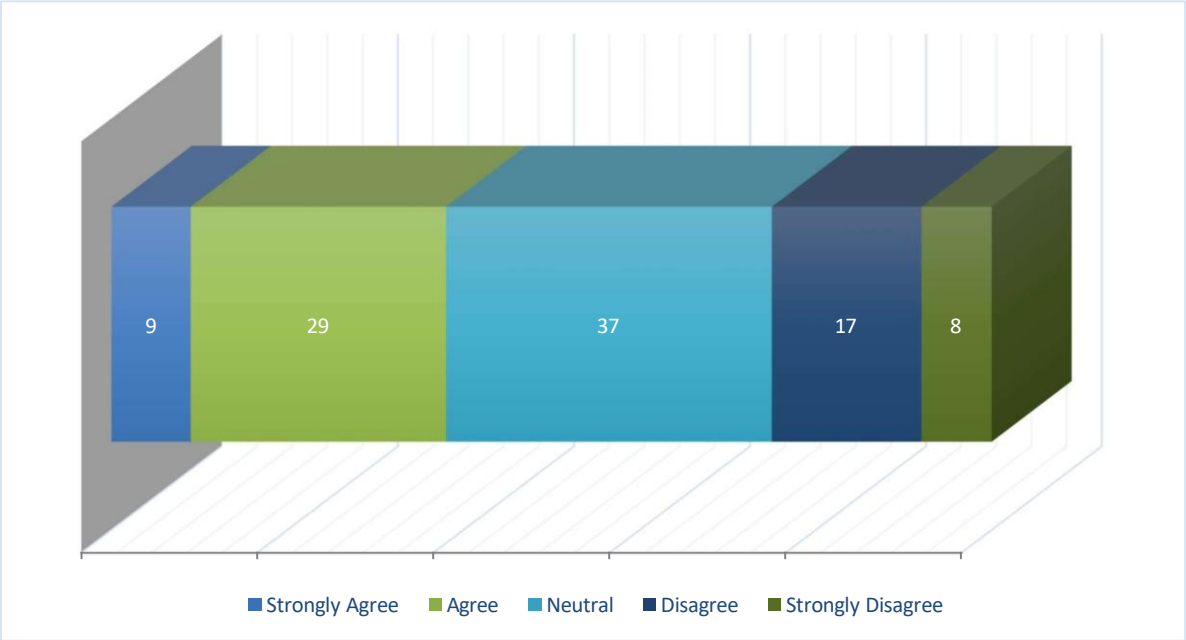

Figure 4.44: Employee-management innovation experience sharing.

The next question discusses cross functional teams in the sector.

Question 45: Are there innovation cross-functional teams within your organisation?

There are some units which are clearly dependent on others and yet some which feed into others in ways that might not be so obvious. In such instances, an appreciation of the organisational processes is required to identify these hidden dependencies. This makes consultation and information exchange between the different organisational teams critical for the success of innovation.

Figure 4.45 shows that less than 50% (49%) responded in the affirmative, while 31% were neutral and 20% disagreed to the statement that innovation cross functional teams existed within their organisations. The results correlate with responses to question 43, where employees and management confirmed to partial sharing of innovative information (38%). The implications are that the CHIETA and its stakeholders do not make use of cross-functional teams and therefore might be losing out on innovation synergies.

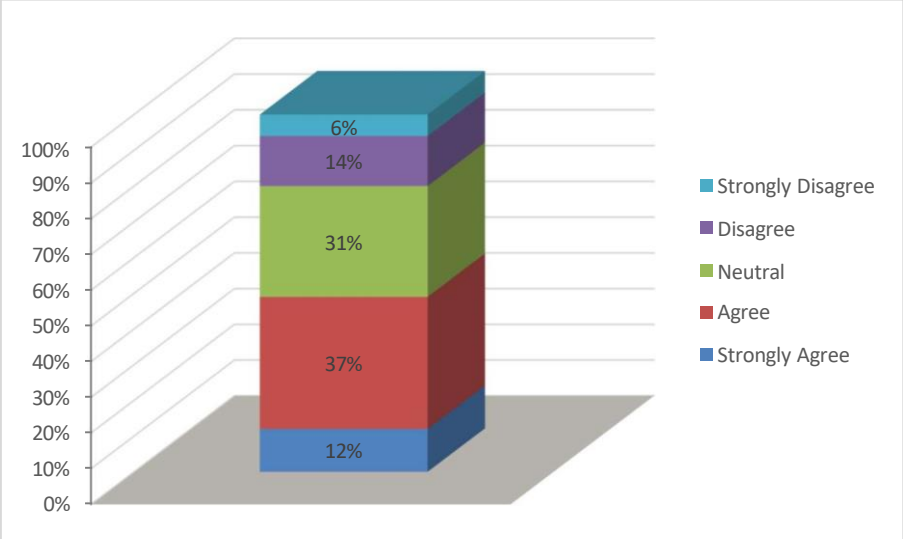

Figure 4.45: Innovation and cross-functional teams

The following question sought to establish the level of involvement of external stakeholders in product/service innovation.

Question 46: Are external stakeholders involved in product/service innovation?

As depicted in Figure 4.46, only 38% of the respondents thought that their organisations consulted external stakeholders on innovation, while 35% were undecided and 27% disagreed. The implications of this finding are that innovation is slow and might not be relevant to industry needs.

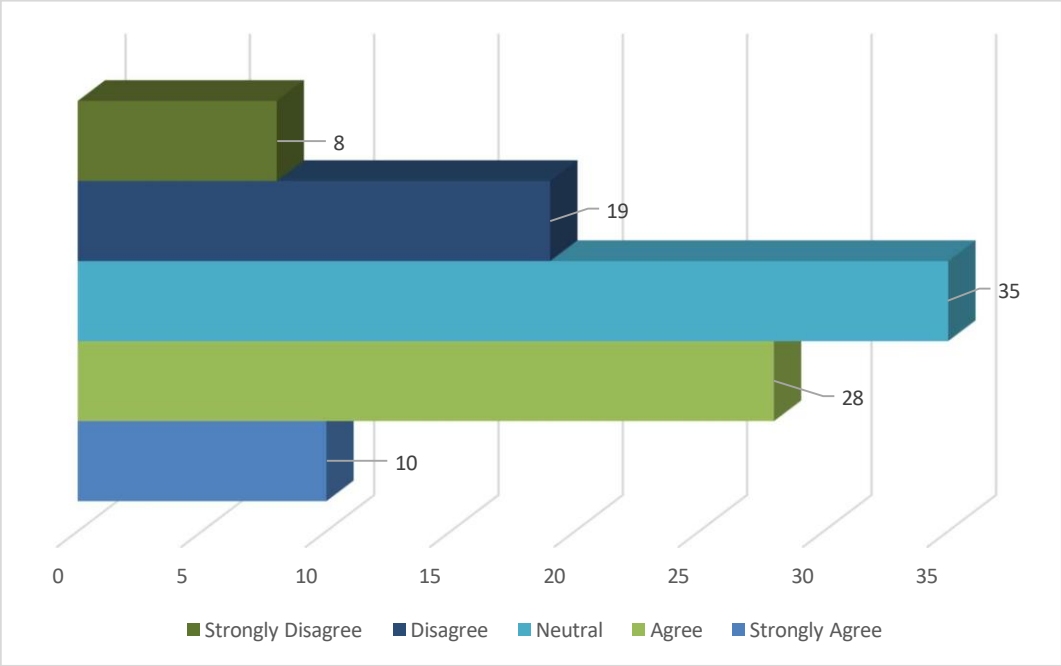

Figure 4.46: External stakeholder involvement in innovation

Innovation is a function of creativity. The next section covers this subject matter.

Question 47: Is creativity and risk taking encouraged?

Creativity and risk tolerance indirectly measures an organisation's innovation appetite. Figure 4.47 shows that 44% of the respondents agreed that their management encouraged creativity and risk-taking, while 31% were undecided and 25% disagreed. The low creativity and risk-appetite percentages confirm the near absence of an

innovative culture within the chemical sector. The implication of this finding is slow rate of innovation as employees fear penalisation should they fail.

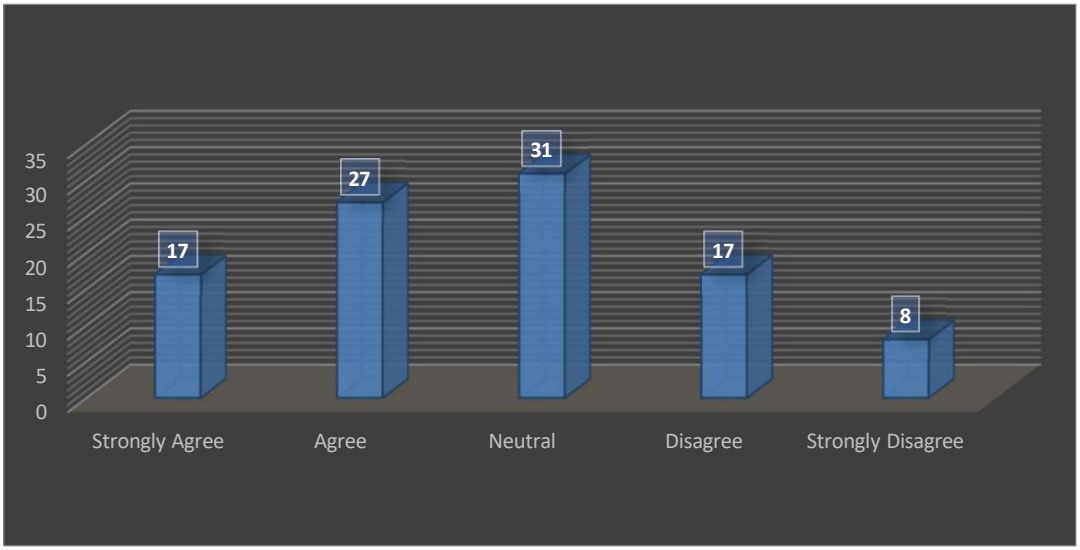

Figure 4.47: Encouraging creativity, autonomy and risk taking

Business initiatives require funding to come to fruition. This is discussed in the section below.

Question 48: Are resources allocated for innovation?

The sustainability of any organisational initiative is dependent on resource availability. In response to the question of whether resources are allocated for innovation, only 48% agreed, 35% were undecided, and 27% disagreed with the statement. The implication of this finding is that innovative initiatives may be aborted and opportunities lost through non funding. A haphazard allocation of resources stifles and frustrates innovators.

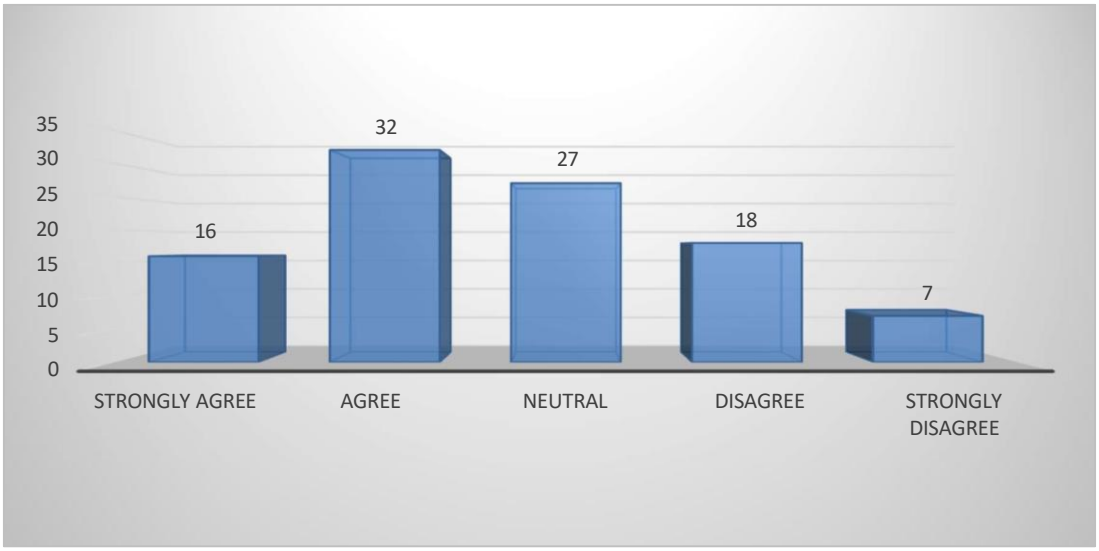

Figure 4.48: Resource allocation for innovation

The section below presents interview responses as to whether any of the CHIETA training programmes incorporate innovation as a module.

Most participants were of the opinion that innovation is not part of any learning programmes. A skills development practitioner expressed these views by saying:

> ***It's not a priority and rigidity is the main cause. There is no information coming through informing of the need for innovation.***

Of a similar sentiment was a former governing board member and union member who said:

> ***Innovation is not part of any learning programmes. The CHIETA's focus is on technical aspects of the chemical sector.***

A skills development practitioner responded:

> ***Innovation is not part of the training programmes at all. It is time consuming, and the focus should be on trades.***

In support of these views, Simon, a CHIETA employee added:

> ***Innovation is not part of any learning programmes.***

Magudumana, another CHIETA employee concurred:

> ***There is no innovation in training programmes; CHIETA skills programmes are outdated.***

An employer representative said:

> ***This is not the case. In the chemical industry, training should be technical.***

A chamber chairperson and employer representative also responded:

> ***There is no such programme because there is no one who considered innovation as being important.***

A CHIETA employee Hongu, added:

> ***In my view, industry is not interested. Industry developed qualifications and if they were interested, nothing prevents them from adding this one module.***

The other respondents had mixed views. A former governing board member and union member said:

> ***There is no programme with innovation as a module. However, innovation was something that industry is not keen on because of the time and costs involved. If industry was to take the lead at TVETs and other institutions, this could be possible.***

The implication of this finding is that, by not including innovation in the trades and skills curricula, learners cannot internalise innovation.

The section below covers collaborations as these are important in the skills value chain, this is discussed below.

4.7 Strategic skills collaboration

The nature of skills is such that the CHIETA has to work with all the chemical industry stakeholders; member companies, labour, skills development practitioner, and learners to effectively plan and implement strategic skills. The multiplicity of stakeholders in this relationship makes collaboration critical if the CHIETA is to deliver on its skills mandate. The multiplicity of stakeholders with often conflicting interests requires strong and formalized collaborations. Each stakeholder should have a clearly defined role if strategic skills development is to succeed.

Collaborations are discussed next.

4.7.1 Existence of strategic skills collaborations

Figure 4.49 shows that 56% of the participants agreed that collaborations existed in the skills partnership, while 31% were undecided and 13% disagreed. Overall, the picture is that though collaborations exist, the level of collaborations is too low. In an effort to understand this score on this construct, the researcher delved into the individual questions constituting the strategic collaborations construct.

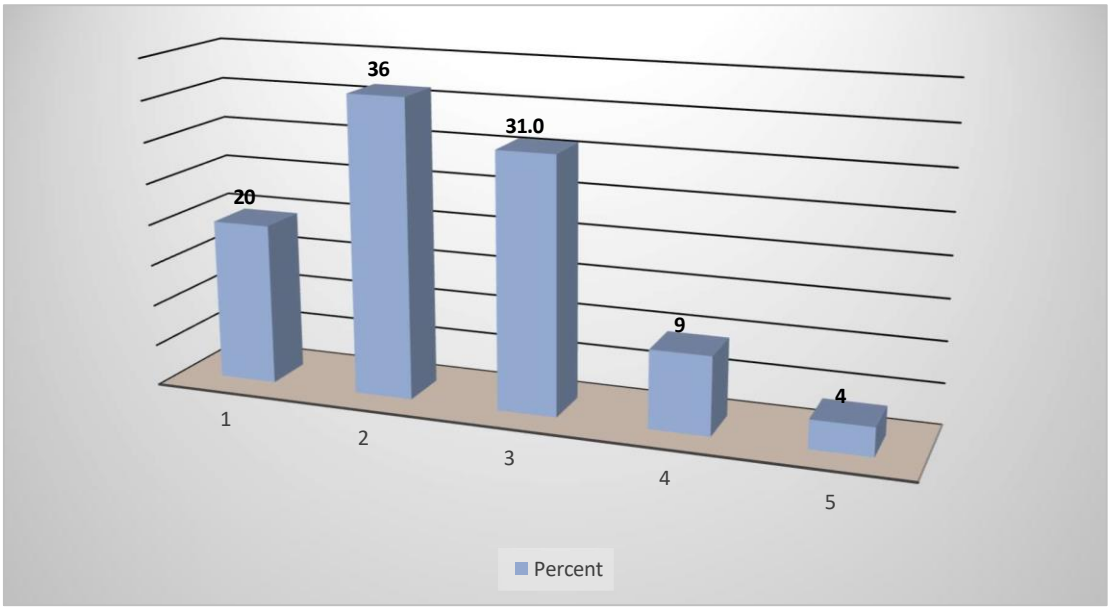

Figure 4.49: Existence of strategic skills collaborations

Streamlined and communicated collaborative processes ensure that problems are pre-emptied beforehand, and that ground rules are clearly understood by all.

Question 49: Are the collaboration processes streamlined?

Figure 4.50 indicates that the majority (57%) of the respondents believed that collaboration processes were streamlined. However, 31% were neutral and 13% disagreed with the statement. That 31% of the respondents were neutral is rather concerning, considering that these are the same stakeholders who must work together to deliver on the strategic skills.

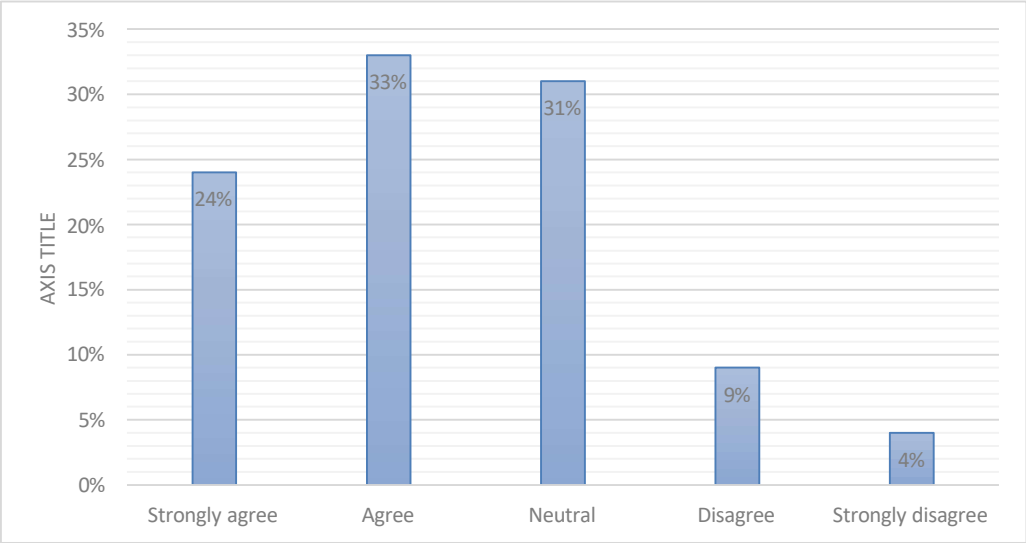

Figure 4.50: Existence of streamlined collaborative processes

Respondents were asked whether the CHIETA treated its stakeholders as equal strategic partners and how this was reflected in decision making. The majority of the interviewees commented that, although the Skills Development Act legislated that equal stakeholder representation on all the CHIETA forums and structures and, by implication, fairly treated, some argued that equal treatment cannot be legislated. Class conflicts were evident, with skills development practitioner and labour holding the opinion that the CHIETA afforded the DHET "government" and the employers preferential treatment whilst, on the other hand, employers believed that the CHIETA favoured government. To illustrate the alleged employer bias, a labour representative said that the CHIETA accepted unsigned SSPs and ATRs that were in contention between employee representatives and employer representatives. This, she reasoned, was evidence that labour representatives were a lesser and inferior stakeholder.

Additionally, she stated that some employer organisations only invest in higher level employee training while neglecting low-level training staff who are represented by unions. This, she contended, indicated a concentration of power in the hands of employers hence a bias against employee representatives.

Asked the same question, Simon, a CHIETA employee said:

> ***It is a collaborative exercise. We start with understanding what industry requires, this is done through the SSP data collected by the CHIETA. This is then discussed, and consensus is reached on what needs to be done to reach the set targets.***

A skills development practitioner responded:

> ***Yes, on paper it is equal treatment but in practice, treatment is not consistent between stakeholders.***

An interesting position was advanced by a former CHIETA employee, now representing the industry, who said,

> ***The CHIETA is biased in favour of those with authority, that is, the Department of Higher Education and Training. The CHIETA can be closed down, consolidated, or put under administration by the DHET. Everyone knows who the boss is in this relationship.***

A chamber member and company representative argued that because of the levy disparities, the CHIETA was biased in favour of those companies and the chambers that contribute more levies or those that are better organised. A director of a small company who was also a chamber member felt that the CHIETA, was an arrogant structure because they had the funds and did not take time to understand the other stakeholders' interests, more so the interests of small companies:

> ***The disproportionate allocation of discretionary grants is a prime example of the corporate industry double-dipping if not completely profiteering from training. Sector skills plans are, in the main, also a reflection of the needs of big business.***

An employer representative stated that:

> ***CHIETA does not treat stakeholders as equal strategic partners. CHIETA is an arrogant organisation. They have the funds and do not take time to familiarise themselves with other stakeholders.***

A skills development practitioner had this to say:

> ***CHIETA does not treat stakeholders as equal strategic partners and the relationship is determined by the size of the organisation.***

Another skills development practitioner added:

> ***CHIETA is a mouthpiece for multi-national corporates and the endeavour of business to maximise return on investment, which really is about***

profiteering and is obviously biased. The CHIETA, organised labour, community-based organisations and government representatives are as much to blame for the unequal and disparate outputs from the CHIETA and in general the domination of SETAs by organised business. For instance, the discretionary grants is a prime example of big industry double-dipping if not completely profiteering by big business. Sector skills plans are, generally, a reflection of corporate giants' needs.

A former board chairperson said:

This is not the case. The CHIETA has no regard for unions. Industry and the DHET are treated better than other stakeholders.

Another skills development practitioner responded:

….it is difficult for companies to be treated equally because of levy income disparities or those that are better organised or formalised. Even project funding in most cases is based on company size and thus levy income.

The other participants believed that the CHIETA does treat stakeholders as equal strategic partners. However, they also made it clear that more still needs to be done. A governing board member and executive said:

CHIETA does treat stakeholders as equal strategic partners, but companies do not participate fully.

Precious, a CHIETA employee added:

CHIETA treats all stakeholders equally as the partnership model does not allow for any other way of operation. CHIETA only facilitates and directs stakeholders in skills.

Cyril, a CHIETA employee responded;

…...all stakeholders are treated as equal strategic partners. In the decision-making process, it is the structures within the CHIETA that drive the process and resolutions are passed through consensus, therefore all are treated equally.

An employer representative stated that:

… during NSDS 1,2 and 3 (2000-2010/19), there was a greater sense of partnership between SETA and its strategic partners. This was embedded within the organisational framework of the SAQA Act, which proposed institutions like [Standard Generating Bodies] SGBs and their relationship with industry sub-sectors or "Chambers". This ensured that a working relationship between industry partners and SETAs developed and thrived. Its unlike current practice.

The purpose of collaborations is to add value and for that to happen, the participating individuals must be *au fait* with discussions on hand.

Question 50: Are the stakeholder representatives relevant?

Relevancy of stakeholder representatives is key to driving the skills agenda just as is knowledge. Figure 4.51 shows that 57% of the participants felt that the stakeholders were relevant while 31% were undecided and 12% disagreed. However, from interview responses, most of the participants disagreed. They stated that the majority of the representatives were SDFs, plant operators and junior human resource officers. It can be concluded that not all the stakeholder representatives are relevant to strategic skills development. The implications are that strategic skills discussions and deliberations might not be at the desired level.

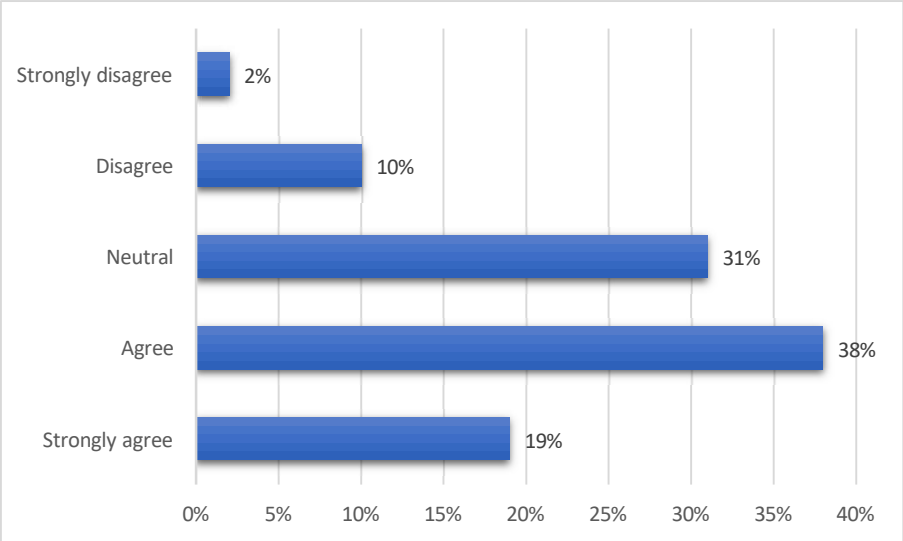

Figure 4.51: Inclusion of relevant stakeholders in the CHIETA structures

Collaborations are strongest where discussions are open and frank. This is covered in the next question.

Question 51: Are the strategic skills discussions open and frank?

The purpose of this question was to understand the level of robustness in strategic skills engagements. This indirectly gauges the level of trust, which is an essential factor in collaborations. As shown in Figure 4.52, a mere 55% of the respondents agreed that the discussions were frank, 31% were undecided and 14% disagreed. The

finding points to a situation where collaborations might not be as effective as desired for strategic skills collaborations as they may lack robustness.

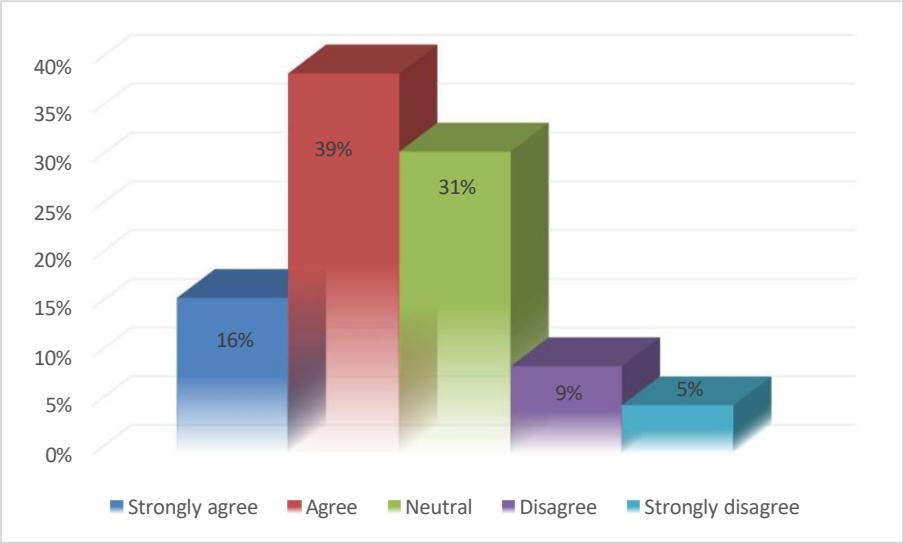

Figure 4.52: Frankness and robustness of discussions

The CHIETA is responsible for the implementation of the chosen strategic skills plans. The next section discusses strategic skills implementation. As with all the previous deliberations, the researcher commences with the construct, this is followed by an analysis of the individual questions making the construct and finally the qualitative analysis.

4.8 Strategic implementation skills

Construct - Do the CHIETA projects staff have strategic implementation skills?

According to the construct as depicted in Figure 4.53, exactly half of the respondents (50%) were of the opinion that the CHIETA staff had strategic implementation skills. A significant percentage (36%) was undecided, while 14% disagreed. The implication of this finding is that every second strategic skills project could be poorly implemented as a result of the high number of CHIETA employees who lack strategic implementation skills.

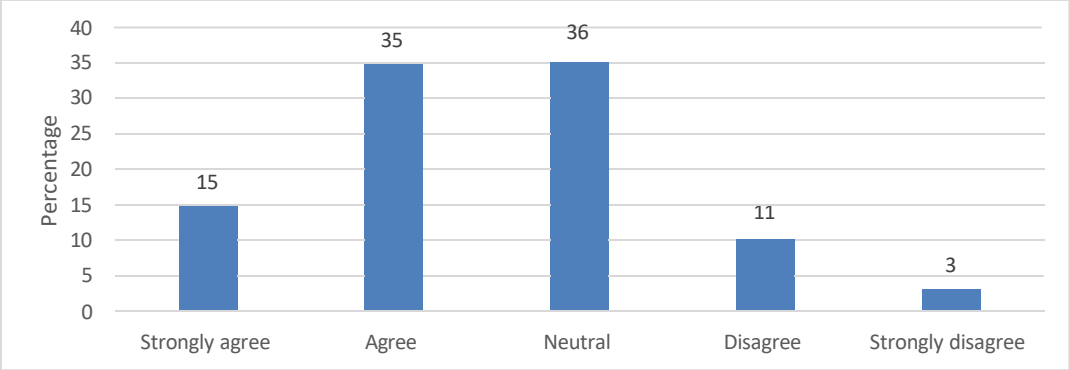

Figure 4.53: Existence of strategic implementation skills

In an effort to understand the reason underlying this finding, an analysis of the individual questions constituting the strategic skills implementation was done.

Question 52: Is implementation strategy integrated with recruitment, and remuneration?

As can be seen in Figure 4.54, of the respondents, 57% believed that human resource recruitment and remuneration were integrated with the organisation's implementation strategy, 30% were neutral and 13% disagreed. The implication of this finding is that, in the main, the CHIETA and its strategic stakeholders partially deliver on strategic skills because the HR recruitment and remuneration are integrated with the implementation strategy.

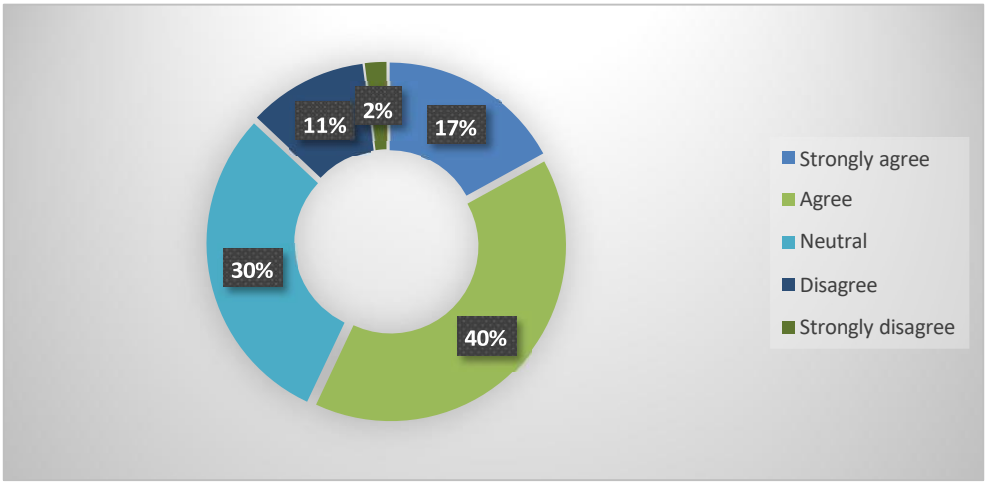

Figure 4.54: Integration of HR recruitment and remuneration with implementation strategy

Strategic skills implementers need to have problem solving skills. This is discussed next.

Question 53: Do the CHIETA strategic skills implementers have problem-solving skills?

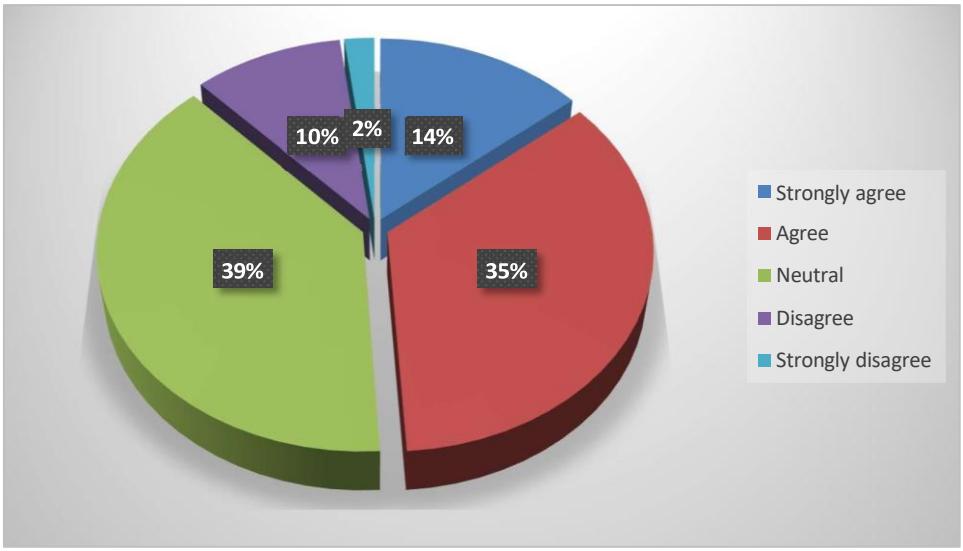

Figure 4.55: Problem-solving skills of people involved in strategic skills implementation.

Problem-solving skills enable employees to address challenges that arise during strategic skills implementation. This is important as it is rare that strategic implementation goes exactly according to the original strategic skills plan. There are challenges that will arise during implementation which would not have been envisaged at the planning stage, these are an inevitable reality of strategy implementation. As can be seen, from Figure 4.55 above, only 49% of the respondents were of the opinion that strategic skills implementers had problem solving skills, 39% were neutral and 12% were in disagreement. Responses from interviewees confirmed this.

Bester was of the view that strategic implementation skills existed though to a limited extent:

> ***The long experienced and seasoned CHIETA regional skills advisors (RSAs) do have strategic implementation skills whilst the relatively new staff are admittedly out of depth. We could do better; there is room for improvement. Strategic planning should involve all RSAs. It is important that they understand the strategy they are implementing.***

Another respondent, an employer representative, echoed the same view:

> ***There are some pockets of excellence out there, but they are very few.***

One senior CHIETA executive thought that the CHIETA's implementation staff were lost to the organisation due to the five-year licensing nature of the SETAs. It should be noted though that the licence term was increased from five years to ten years as of 2020.

A CHIETA staff member, Mish had this to say:

> ***It is a complex environment and due to the short life-cycle of SETAs, staff are not as loyal as in a public or private entity, where employment contracts are permanent.***

The implication of employing staff without problem-solving skills is that strategic implementation will take much longer, might be at a higher cost, and it might cause duplication of effort and unnecessary wastage.

Strategy implementation requires planning and change management skills, this is the discussion in the following section.

Question 54: Do the CHIETA strategic skills implementers have effective planning and change management skills?

In response, only 47% agreed, 42% were neutral and 11% disagreed with the statement that strategic skills implementers had effective planning and change management skills. The implications of this finding is that the strategic skills plans may take longer to implement, as they use more resources, and some might not be completed because strategic skills implementers lack planning and change management skills.

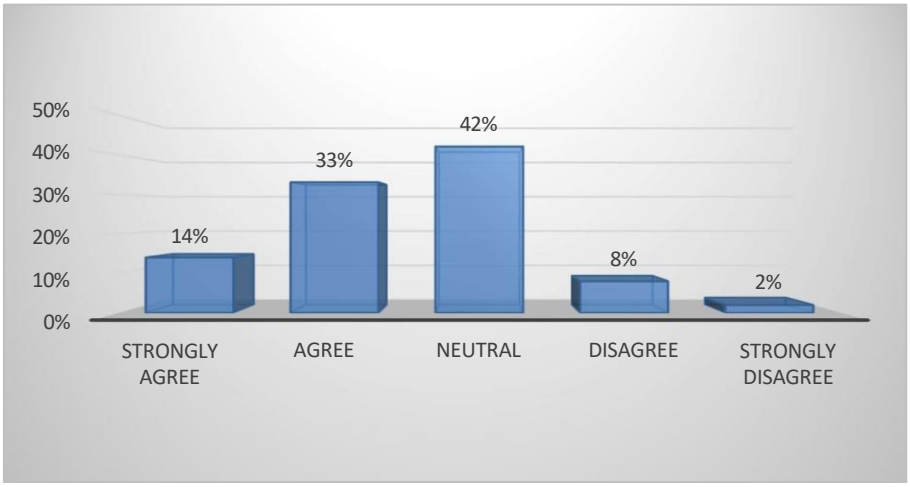

Figure 4.56: Understanding of effective planning and change management.

Middle management's involvement in strategic skills development influences employees' participation.

Question 55: Is middle management involved in strategic skills implementation?

As can be seen from Figure 4.57, exactly 50% of the respondents thought that middle management was involved in strategic skills implementation, while 40% were neutral and 10% disagreed with the statement. The implication is that there were no strategic skills champions.

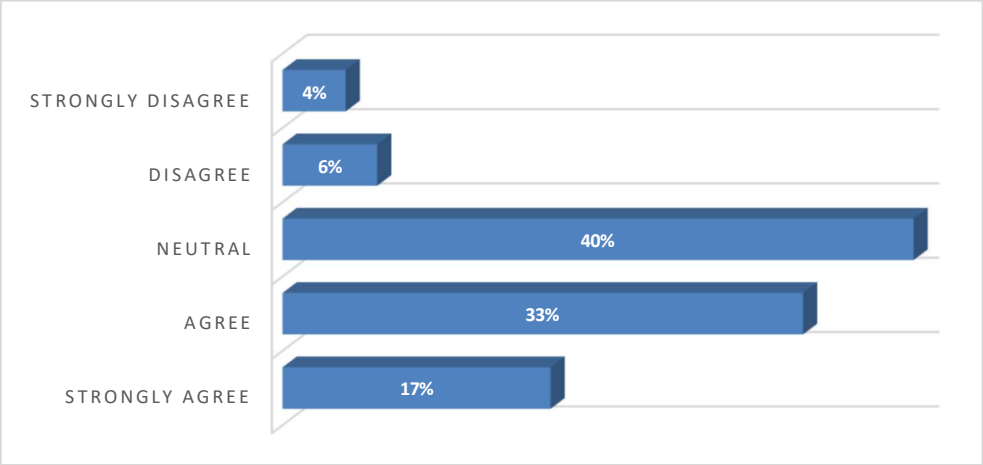

Figure 4.57: Involvement of middle management in strategic skills implementation

The next section addresses the question of whether the CHIETA and its stakeholders held staff accountable for poor strategic implementation choices.

Question 56: Are there consequences for poor strategic skills implementation choices?

In response, only 44% of the participants agreed that there was accountability for poor strategic implementation choices, 30% were neutral and a significant number (26%) disagreed. There was overwhelming evidence of employees not being held accountable for poor strategic implementation choices. The implication of this finding is that there is a possibility that management will not choose the best implementation strategy as there are no consequences.

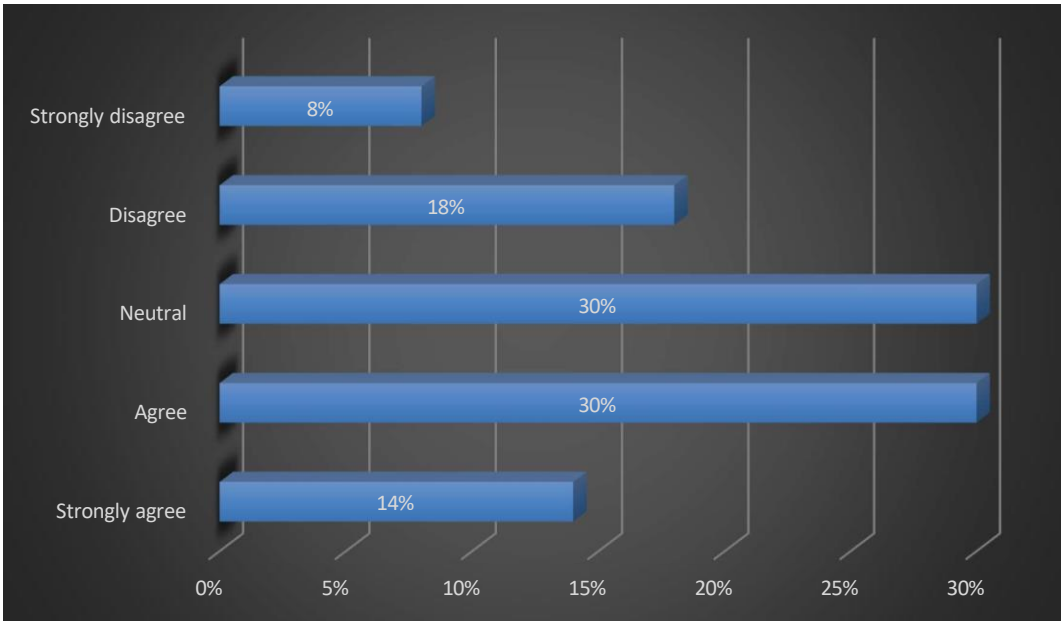

Figure 4.58: Accountability for poor strategic choices

Interview questions that were posed to participants on whether stakeholders thought the CHIETA employees had the requisite strategic implementation skills, though mixed, were largely positive. There were comments on improvement and partial approvals.

The following was a response from a skills development practitioner:

> ***Most CHIETA staff have strategic implementation skills.***

Another skills development practitioner also agreed:

> ***The CHIETA project staff do have strategic implementation skills.***

Jonso, a CHIETA employee said:

> ***The CHIETA project staff have strategic implementation skills, however, more engagement with employers would assist.***

Another CHIETA employee, Tino, agreed:

> ***CHIETA projects staff have strategic implementation skills.***

A chamber chairperson and employer representative added:

The CHIETA projects staff have strategic implementation skills.

In support, a regional manager also agreed but with reservations:

> ***… the implementation skills existed to some extent however, there are instances where one could be embarrassed because of poor implementation skills.***

Other participants, however, felt that strategic skills implementers did not have the requisite skills. This was expressed by a former governing board and union member who said:

> ***The implementers do not have the skills, they do not do follow-ups.***

An employer was of the view that:

> ***CHIETA project staff do not have strategic implementation skills and there are cases where appointments were made with stakeholder company representatives but were not fulfilled. Also, there are instances of multiple document submission that continuously get lost. Dealing with the CHIETA is a frustrating experience.***

A governing board member also added:

> ***The staff do not have strategic implementation skills. As a company, we contact the CHIETA staff and beg them to assist to no avail. There are cases where projects are not finalised simply because an RSA did not make time to visit the company.***

An employer also said:

> ***Staff do not have the strategic implementation skills and are also arrogant.***

Any initiative will falter if it is not backed by resources. The following question sought to understand the extent to which resources are made available for strategic skills implementation.

Question 57: Are resources allocated for strategic skills implementation?

As can be seen in Figure 4.59, a mere 53% of the respondents were of the opinion that resources were allocated for strategic skills implementation, 30% were undecided and 17% disagreed.

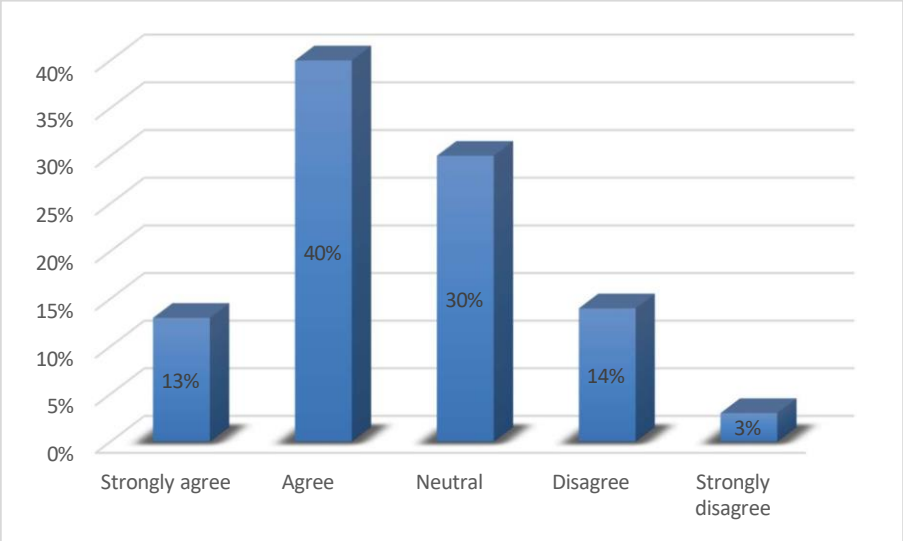

Figure 4.59: Resources allocated for strategic skills implementation

Responses to an interview question on resource allocation for strategic skills implementation indicated that there is still room for improvement.

Expressing such sentiment was a skills development practitioner who said:

> ***… though resources are made available, they are limited.***

In agreement was a CHIETA employee, Gari, who responded:

> ***… they are available, but they are not enough.***

Charity another CHIETA employee added:

> ***The CHIETA makes resources available for strategic skills implementation, however such resources are not made available in all cases.***

Jacob one of the CHIETA staff members concurred:

> ***The resources are provided, but they are not enough.***

A governing board member and executive also said:

> ***Resources are made available for strategic implementation though they might not be enough.***

Another governing board member and executive agreed:

> ***… resources are made available …***

However, other participants were of the view that their organisations did not make resources available for strategic skills implementation.

Of that opinion, was Simon, a CHIETA employee who said:

> ***I have been requesting additional resources for a long time to no avail. We are doing what we can with the limited resources without complaining.***

A governing board member and executive agreed:

> ***… there are insufficient resources.***

Tindo, a CHIETA employee added:

> ***… resources are not made available.***

The finding confirms that some and not all strategic skills implementation initiatives are resourced. Implications are that not all strategic skills implementation initiatives are completed in time and provide return on investment.

Strategic communication is key for effective skills implementation.

Question 58: Is strategic skills implementation clearly and adequately communicated?

As can be seen from Figure 4.60, only 48% of the respondents believed that strategic skills implementation communication was clear whilst 38% were neutral and 14% disagreed. It is clear that the CHIETA poorly communicates its strategy implementation. Poor communication presents an artificial barrier between the member company grant recipients and the CHIETA. This has the effect of creating a false resentment from member companies whereas the reality is that they do not understand what it is that the CHIETA is trying to achieve. This also slows down strategic skills implementation.

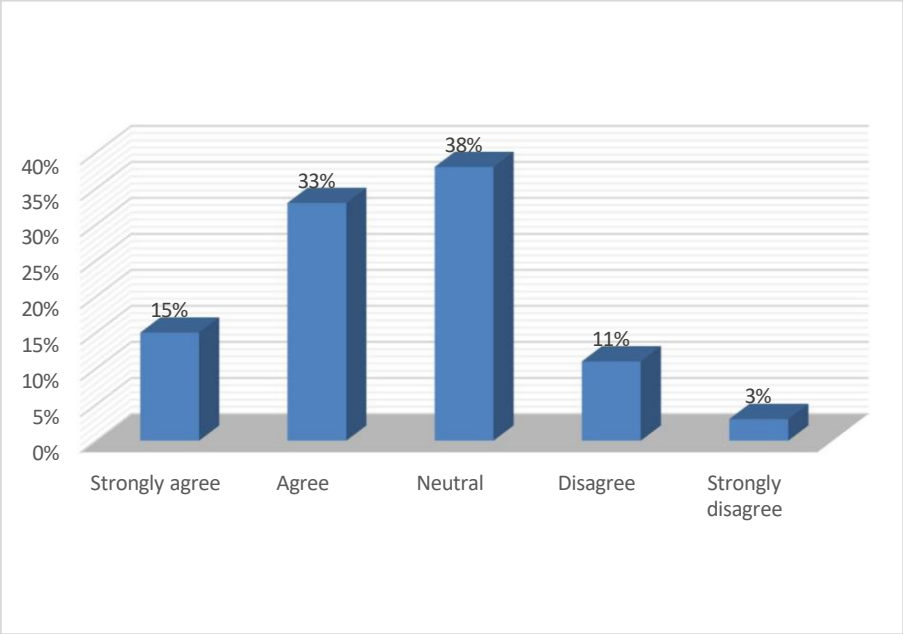

Figure 4.60: Clarity of the communication of strategy implementation

The easier it is to understand a strategy implementation process, the easier the implementation. This is discussed below.

Question 59: How simple are the strategic skills implementation processes?

Less than half (45%) of the respondents believed that the strategic skills implementation processes were simple, 37% were neutral, while 18% disagreed. This implies that the implementation of skills plans may take longer, and it might be more expensive as a result of the complex nature of the process.

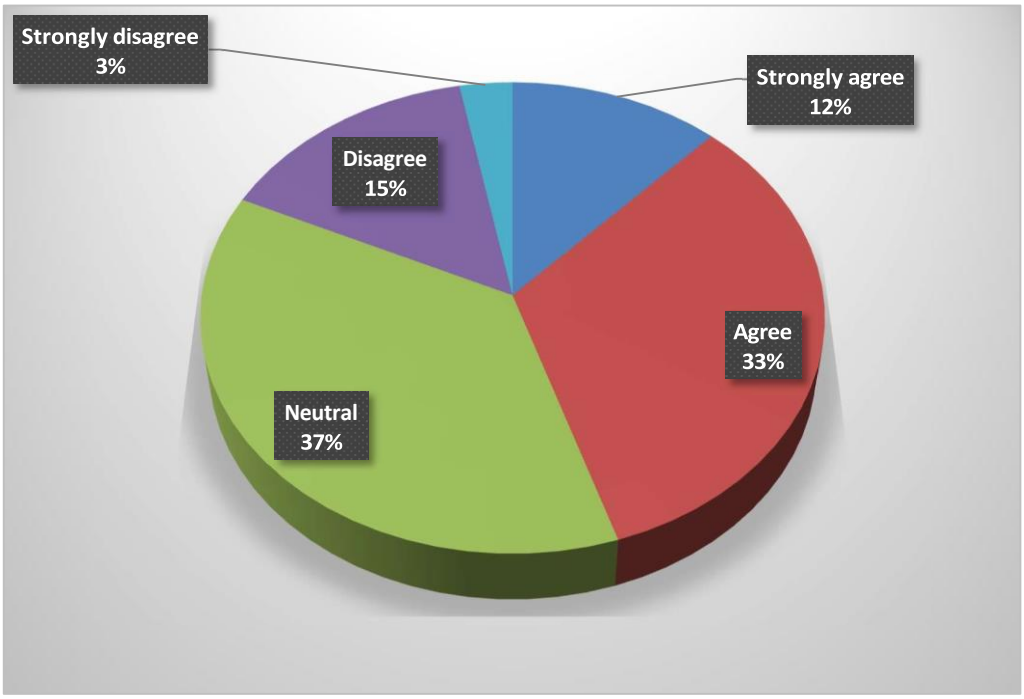

Figure 4.61: Simplicity and clarity of strategy implementation processes

The next section presents responses to interview questions on strategic skills implementation challenges in the chemical industry.

A number of the interviewees mentioned that they felt that strategic skills implementation was hindered by bureaucracy and that there was too much administrative work. A former governing board member and union member said:

> ***There is too much administrative work. The general slowing down of the economy and retrenchments complicate strategic skills implementation as employers focus on sustainability.***

A governing board member and company representative had this to say:

> ***… too much administrative work as well as absence or unclear communication between the CHIETA and the stakeholders.***

Bester, a CHIETA employee had the following in response:

> ***There is too much administration work.***

A skills development practitioner also concurred:

> ***There is too much administration work involved in grants projects implementation.***

A labour skills research specialist and employee added that:

> ***… bureaucratic systems within the CHIETA and training payment delays which, in some cases, affect member company cashflows as they would have used their own funding in anticipation of early disbursement.***

A former board chairperson also said:

> ***… it takes too long to have training programmes accredited.***

An employer also agreed:

> ***… bureaucracy is a serious challenge.***

Poor communication was also highlighted as a challenge to strategic skills implementation. Chamu, a CHIETA employee said:

> ***… lack of sufficient communication between stakeholders and the CHIETA staff with regard to training***

A company representative said:

> ***The CHIETA at times makes changes to the grants processes and systems without communicating with the stakeholders.***

A chamber chairperson said:

> ***Undue long waiting period for assessor and moderator certification, non-responses to the status of applications and an absence of email client protocol ... The notion that SETAs are policing strategic skills development and not supporting skills development is still evident. A 'comply at all costs culture exists, with very little empathy for the learner or the levy-paying client and lack of strategic support from their boards and committees.***

This response summed up the frustrations that stakeholders experienced from the CHIETA in strategic skills implementation.

A former board member and unionist commented on employee attitudes towards training:

There is an absence of a skills development culture among some employees. As a result, some employees feel they are too old to attend training. Consequently, these employees lack mobility and get frustrated because of the low salaries they get.

Lack of commitment to strategic skills from some quarters of the stakeholders was identified as an implementation challenge. Whilst these employers applied for grants, they were reluctant to release employees from production for training, some would in addition, not open workspaces for experiential training/ work integrated learning.

The lengthy accreditation time it took for skills development practitioner was also raised as a challenge and this, they reasoned, resulted in training backlogs. It was also mentioned that the costing model adopted by the CHIETA for learner training excluded some important non-direct training expenses. One of the examples provided included travelling, which ultimately has a bearing on the learners' ability to complete training programmes. Related to this challenge were the limited alternatives to formal class learning as there are few online skills development practitioner that are available as well as a narrow choice of programmes on offer.

A former CHIETA executive and current labour representative had this to say:

Non-payment of wages whilst on training is a disincentive for training. Employees are prejudiced as they lose out on earnings for the period, they attend skills training.

Some companies were said to bond employees for an equivalent period after training and they demanded that the employees pay back the fees that were incurred for training should they change employers within a certain time frame. As a result employees were not motivated to attain new or to improve their skills. Some respondents decried the commodifying of qualifications through privatisation of TVETs. The cost of skills training at private institutions was said to have gone beyond affordability to the previously disadvantaged. Another challenge raised was that the majority of the lecturers at public TVETs lacked industry experience and were not exposed to modern technology and equipment. Other respondents pointed to the absence of career guidance and role models in the previously disadvantaged communities.

Most small companies had the challenge of releasing employees for skills training. When they released staff, the expectation was that the training should be done in the

shortest time possible to minimise production loss. Additionally, some employer representatives raised concerns that new employees from public TVETs were not work-ready. This was because work readiness was not a component of training programmes. Another challenge raised was industry and society's negative view of TVETs.

4.9 Regression results

The section below presents results from the categorical regression model.

4.9.1 Model summary

Regression results as depicted in Table 4.1 show that 64.3% of variability in strategic skills development was accounted for by the variability in vision and mission, innovation, strategic implementation and collaboration together (R-square = 0.643). The footnote to this table indicates the variables that were included in this equation.

Table 4.1: Model summary

Multiple R	R Square	Adjusted R Square	Apparent Prediction Error
.589	.643	.566	.597

Dependent Variable: REGR factor score 2 for analysis 1; Predictors: REGR factor score 1 for analysis 1; REGR factor score 4 for analysis 1; REGR factor score 3 for analysis 1; REGR factor score 5 for analysis 1.

Table 4.2: Coefficients

	Standardised coefficients				
	Beta	Bootstrap (1000) Estimate of Std. Error	df	F	Sig.
COLLABORATION	.243	.161	2	1.077	.095*
INNOVATION	.317	.335	1	1.364	.029**

PLANNING	.474	.417	3	0.840	.072*
IMPLEMENTATION	.123	.203	3	.257	.046**

*, **, *** Represent statistical significancy at 10%, 5% and 1% level respectively

The categorical regression (Table 4.2) results show that the coefficients for collaboration, innovation, planning and strategic implementation are positive and statistically significant at the 5% and 10% level. These findings suggest that improvements in collaboration, innovation, planning and implementation have positive impact on strategic skills development. In other words, Table 4.2 shows evidence that strategic skills development depends on factors such as strategic skills planning, collaboration, innovation and implementation to be successful.

The researcher addressed the research question that was introduced in Section 1.4 and the hypothesis introduced in 1.4.1 in which all the null hypotheses were accepted. The detail is provided below:

Hypothesis 1

Ho: Strategic skills development is not significantly determined by strategic skills planning.

Ha: Strategic skills development is significantly determined by the strategic skills planning.

The first hypothesis set out to establish whether strategic skills development is significantly determined by strategic skills planning. The result to this question from the regression model produced a statistically significant coefficient (0.072). This result infers that strategic skills planning is a significant determinant of strategic skills development. This implies that the null hypothesis is accepted in that strategic skills development is significantly determined by strategic skills planning.

Hypothesis 2

Ho1: Strategic skills development is not significantly determined by the strategic skills collaborations.

Ha1: Strategic skills development is significantly determined by the strategic skills collaborations.

In the second hypothesis the researcher set out to establish whether strategic skills development is significantly determined by strategic skills collaborations. The result was a statistically significant coefficient (0.095). This means that strategic skills collaborations significantly influence strategic skills development. Therefore, the null hypothesis is accepted as strategic skills development is significantly determined by strategic skills collaborations.

Hypothesis 3

Ho2: Strategic skills development is not significantly determined by strategic skills innovation.

Ha2: Strategic skills development is significantly determined by strategic skills innovation.

In the third hypothesis, the researcher set out to establish whether strategic skills development is significantly determined by strategic skills innovation. The finding from the regression model produced a statistically significant coefficient (0.029). This suggests that strategic skills innovations significantly influence strategic skills development. Therefore, we accept the null hypothesis that strategic skills development is significantly influenced by strategic skills innovations.

Hypothesis 4

Ho3 Strategic skills development is not significantly determined by strategic skills implementation.

Ha3: Strategic skills development is significantly determined by strategic skills implementation.

In the final hypothesis, the researcher set out to establish whether strategic skills development is significantly determined by strategic skills implementation.

Results from the regression model produced a statistically significant coefficient (0.046). This finding implies that strategic skills implementation significantly influences strategic skills development. Therefore, we accept the null hypothesis that strategic skills development is significantly influenced by strategic skills implementation.

4.10 Emerging themes

As stated in chapter 3, thematic analysis was performed on the qualitative data collected. The themes that emerged are discussed under each of the constructs below.

4.10.1 Strategic planning

The dominant theme was that the CHIETA and its strategic skills stakeholders practiced limited strategic skills planning. The majority of the interviewees were of the view that the CHIETA and its stakeholders did not do scenario planning and that they did not do justice to strategic skills planning. Though this was the dominant theme, there were some who were convinced that there are other chemical member companies that practiced scenario planning. Strategic skills planning requires that organisations do environmental scanning. This combination ensures relevancy of strategic skills offered by the CHIETA.

4.10.2 Strategic skills collaborations

The theme that emerged was that though collaborations existed, they were weak. There were clear stakeholder class differences which made collaborations difficult. Employers were of the impression that the CHIETA was too powerful, and that it did not listen to them. Amongst the employers, the views were that the CHIETA favoured those companies that paid more skills levies whilst the CHIETA was of the impression that the DHET was too bureaucratic, and it had too much power.

4.10.3 Strategic skills innovation

The dominating theme was that there was little to no innovation within the CHIETA and its stakeholder member companies. This was because most of the organisations were not designed for innovation nor was innovation part of any training programmes. Additionally, this was because of the absence of an innovative culture, as well as absence of innovation champions. This was surprising given that the interviewees included representatives from large companies within the chemical sector. Notwithstanding this finding, there was wide acknowledgement by most respondents on the importance of innovation given global competition.

4.10.4 Strategic skills implementation

The general theme was that the CHIETA did not fare well in strategic skills implementation. This, the participants argued was reflected in the long periods it took to close out simple projects. Examples included instances where projects had been extended or terminated because either they had become irrelevant as a result of the drawn-out time, or the company would have lost a resource. Validity and reliability are discussed next.

4.12 Summary of the chapter

The analysis shows that a considerable percentage of stakeholders (57%) agreed that the vision statement was clear, and it was understood by the strategic skills stakeholders. A majority of the respondents (77%) affirmed that the CHIETA's mandate was clear. This was against a backdrop of 57% who responded that the vision was clear and understood (see Figure 5.8). On the other hand, 61% of respondents were of the view that they were aware of the CHIETA's vision statement (Figure 5.1). This might point to the stakeholders assuming clarity of the mandate, not necessarily because the vision is clear and well communicated. More than half of the respondents (56%) felt that they owned the CHIETA's vision and mission statement. This strongly correlates with the other responses to the vision and mission questions, which confirms that the question was understood by the respondents.

The quantitative results were that 56% agreed to the assertion that the CHIETA and its strategic skills stakeholders practiced strategic skills planning, 30% were undecided

and 14% disagreed. The triangulation through interviews provided respondents with an opportunity to explain the causes of these low scores, which ranged from failure to consult, research shortfalls, inflexibility and the CHIETA being compliance focused. The findings confirmed that the CHIETA practices strategic skills planning to a limited extent. Amongst the reasons provided were; the involvement of industry experts in some and not all strategic skills planning processes and the focus on development of low-level skills programmes. Limited data sources were also cited and so was the absence of a credible MIS capable of processing the strategic skills data for effective strategic skills planning in the chemical sector. A nationally integrated MIS system simplifies both data collection and analysis.

Lack of role clarification between the DHET "government", the CHIETA and its strategic skills stakeholders was identified as a challenge. Some company representatives on the various CHIETA forums were found to be too junior to contribute meaningfully to the strategical skills agenda. Although the CHIETA was practicing scenario planning, it lacked the capacity to engage in futuristic skills planning. There was too much focus on low-level, non-strategic skills programmes by the CHIETA. On the other hand, the CHIETA's training programmes were found to be supplier-driven rather than demand-driven, thereby resulting in an oversupply of learners whose skills were not required by the sector. This meant that learners could not be absorbed after completion. Furthermore, respondents from the previously disadvantaged learners groups mentioned a lack of career guidance as a handicap as they only became aware of compulsory maths and science subjects when applying for tertiary studies.

The overall quantitative research finding on strategic skills innovation revealed that this was negligible as only 46% of the participants responded in the affirmative. The qualitative responses were damning as there was not even one who agreed that the CHIETA was in an innovative space. This was largely attributed to the chemical industry organisations being inflexible and the absence of an innovative culture. The respondents lamented that senior and middle managers were not involved in strategic skills innovation. Additionally, resources were not made available for innovation initiatives. It was also found that the different management layers at the CHIETA and its strategic skills stakeholders did not share innovative experiences neither were there

cross-functional teams for purposes of innovation. External stakeholders were not encouraged to contribute to innovation and the CHIETA did not regularly review its curricula to match industry's demand.

Research findings were that collaborations did exist to some extent in the skills value chain. There was, however, a high number of undecided respondents. Some of the reasons for this high undecided figure were provided in the interviews, with most participants commenting on the skewed relationships heavily in favour of the government and the CHIETA being considered to be too bureaucratic. It was noted that there were perceptions of preferential treatment between the different stakeholder constituencies. skills development practitioner and labour were of the opinion that the CHIETA treated the government and employers better than them, while employers opined that the CHIETA favoured government.

The findings on the CHIETA staff having strategic implementation skills were mixed, though heavily tilted towards the negative. Reasons for this were largely poor communication and high staff turnover as well as lack of industry knowledge. In respect of strategic skills implementation challenges, these included learners' loss of income during the period they were in training as well as the high cost of private TVETs. The SETA's life span of five years was identified as a challenge however, this was increased to 10 years during the compilation of this research.

The bureaucracy involved in most CHIETA qualification registration processes as well as delays in learner certification and skills development practitioner accreditation were some of the challenges identified. It was also found that smaller companies did not have the luxury of releasing employees to attend strategic skills training. Another challenge that was raised by employer representatives was that new employees from institutions of higher learning were not work-ready as this was not a component of the training programs. Strategic skills implementation was ill-resourced. There was also an absence of a skills culture from both the employers and the employees.

4.13 Conclusion

This chapter provided the reader with an in-depth insight into how the collected data for this study was analysed. The researcher utilised a sequential explanatory

approach, where the data that was obtained through the questionnaire was presented followed by the data that was obtained through the interviews. This approach has the advantage of allowing for the exploration and the explanation of the findings. This approach meant that for qualitative analysis, only the dominant theme was presented under the different constructs. A summary of the identified emerging themes is presented in Section 4.10 where the data is analysed under the different constructs.

As had been anticipated, respondents in the interviews raised important points through answering questions as well as by offering extraneous views in the discussions. The obtained data that was analysed included issues on all the four constructs; strategic skills planning, strategic skills innovation, strategic skills collaborations and strategic skills implementation. The various respondent groups in the interview processes, that is, the CHIETA staff, employers, the CHIETA board, DHET, skills development practitioners and unions provided the emergence of convergent and divergent information, thereby allowing for cross-comparisons of the different views presented. Whereas the CHIETA perspective presents the insider views from the institution under study, the industry, skills development practitioner and employee representative perspectives give the strategic partners' views. Whilst the findings presented in this chapter in some cases confirm the empirical evidence, on other issues the findings identify gaps in knowledge that would assist strategic skills policy makers and practitioners in engaging in focused, informed and cost-effective strategic skills development.

CHAPTER 5

DISCUSSION OF FINDINGS

5.1 Introduction

This chapter reflects on the main findings of the study which were responses to research questions that were developed in Chapter 1. These discussions have been grouped into five sections with each addressing the research questions which are restated below:

i) To what extend does the CHIETA and its stakeholders practice strategic skills planning ?

ii) What is the level of collaboration between the CHIETA and its stakeholders?

iii) To what extent does the CHIETA and its stakeholders embrace innovation in the chemical sector?

iv) To what extent are the CHIETA and its stakeholders involved in strategic skills implementation?

v) What are the factors that impede strategic skills implementation within the CHIETA?

In discussing the findings, the researcher captures the responses to the respective research constructs referred to in chapter 3. However, to provide clarity, the individual questions which constitute the construct, e.g. " strategic skills planning" are discussed thereby providing the clarity on the summary that would have been presented under the construct. The constructs are re-stated below as; strategic skills planning, strategic skills collaborations, strategic skills innovation and strategic skills implementation. These responses are then reviewed against previous studies and any similarities or differences are highlighted.

5.2 Discussion

The discussion of findings commence with the strategic skills planning construct under 5.2.1. The approach to the analysis was first the construct this was followed by a discussion of the findings on the individual questions addressing the strategic skills planning construct that was covered from 5.2.1.1 to 5.2.1.14.

5.2.1 Strategic skills planning

From research findings in this study, it is evident that the CHIETA and its strategic skills stakeholders practice limited strategic skills planning. According to Messaoud (2022), strategic skills planning is key to strategic skills development. Some of the reasons for the low positive reasons were that emerging sectors were not considered for strategic skills planning. Research findings in Poland proved that organisations benefit from considering emerging sectors of the economy by targeting the new skills requirements (Piwowar-Sulej, 2021). Responses to the CHIETA conversion of collective knowledge into institutional intelligence was inconclusive. There is empirical evidence proving that institutional intelligence builds competitive edge (Dellermann, Ebel, Sollner & Leimeister, 2019); (Elia, Margherita & Passiante, 2020) and (Ho & Hancock, 2018). Another observation was that the CHIETA and its strategic skills stakeholders did not involve their customers in strategic skills planning, contrary to findings by Keiningham, Aksoy, Bruce, Cadet, Clennell, Hodgkinson and Kearney, (2020) who reason that customer centrality is the holy grail for strategic skills planning success. The chemical sector stakeholders did not do scenario planning. According to Schwarz, Ram and Rohrbe, (2019) scenario planning aids strategic skills planning through the identification of potential skills demand for the future. Another finding was that the CHIETA and its strategic skills stakeholders did not benchmark practices. Research study in Turkey, concluded that benchmarking is beneficial to business as the basis for competition (Erdil & Erbiyik, 2019).

To provide a clearer picture of this construct there is need to analyse the individual questions to this construct, (statistical) scores of which ranged between 50% and 59%. One of the factors that determines the development of an effective strategic skills plan is stakeholder strategic skills knowledge. This is discussed below.

5.2.1.1 Stakeholder strategic skills knowledge

Not all strategic skills stakeholder representatives were knowledgeable about strategic skills. The Skills Development Levies Act 1998 only prescribes the constituency from which representatives should come from. The CHIETA's board and forum nomination processes are thus constituency based and do not require a pre-determined skills set. This means plant operators and junior staff can be representatives. The importance of knowledgeable stakeholders cannot be overemphasised. Research conducted in New Zealand, Eweje, Sajjad, Nath & Kobayashi, (2021) found that stakeholders' understanding of the purpose of strategic skills development was critical to achieve the common goal for mutual benefit. Interestingly, Scoular, Duckworth, Heard and Ramalingam, (2020) came to the same conclusion that strategic skills stakeholder representatives should take responsibility for knowing what needs to be known and for ensuring that others know what needs to be known. Scanning of the strategic skills environment is discussed below.

5.2.1.2 Scanning strategic skills environment

Research results revealed that, though the CHIETA and its strategic stakeholders did some environmental scanning, there was room for improvement. The implications for the CHIETA not doing proper environmental scanning means there could be non- alignment between strategic skills that are offered by the CHIETA and those required by the sector. Alignment between demand and supply will lead to better utilisation of scarce resources in developing in demand skills. Research conducted in Australia; Jiang, Ritchie and Verreynne, (2019) and in Germany ; Hillmann and Guenther, (2021) concluded that understanding an organisation's environment was key to strategic skills planning. The section below discusses the involvement of strategic stakeholders in strategic skills planning.

5.2.1.3 Stakeholder involvement in strategic skills planning

Research findings were that some of the stakeholders felt that they were marginalised by the CHIETA. Clear class differences existed within the stakeholder clusters where each stakeholder group harboured perceptions of the other stakeholder being preferred above the other. Differential treatment, real or perceived, has the potential of reducing motivation and loss of interest by those who feel marginalised. The CHIETA relies largely on the goodwill of strategic skills stakeholders serving on the

different committees to promote these skills in their different workplaces and across the sector. It is therefore important that all stakeholders feel that they are included in the strategic skills planning process as there are benefits that accrue from that (Louch, O'Hara & Mohammed, 2017). Another finding was that the inclusion of industrial experts in strategic skills planning was not mandatory, there is no provision under the current legislation as their inclusion is discretionary. The inclusion of industrial experts in strategic skills planning increases implementation success potential (Tennoy, Hanssonb, Lissandrelloc & Naess, 2016). Resource allocation is discussed below.

5.2.1.4 Resource allocation for strategic skills planning

Findings were that resources were not prioritised for strategic skills planning. The success of strategic skills planning is directly dependent on investment in organisational resources (Maritan & Lee, 2017; Levy, 2017; Dania, Hiba & Ali, 2020; Dania, Hiba & Ali, 2020). This was echoed in a research finding in Slovenia, which concluded that the rate and intensity of innovation was corelated to resource availability (Trajkovski (2018). Resource allocation should not be partisan, but be based on an objective criterion (Roelens, Steenacker & Poels, 2019; Demir, 2018).

Strategic skills planning communication is discussed below.

5.2.1.5 Strategic skills planning communication

The finding in respect of strategic skills planning communication, though inconclusive in the survey, was clear in the interviews. Communication between the CHIETA and its stakeholders was poor, and it was found to be one dimensional. There is need for clear communication between strategic skills stakeholders, its absence causes confusion and frustrations (Gracio & Rijo, 2017; Nwabueze & Mileski, 2018; Hyland- Wood, Gardner, Leask & Ecker, 2021). Similar findings were made in the United Emirates, in Abu Dhabi, which confirmed the need for effective internal and external communication if strategic skills planning is to be a success (Hasanaj & Manxhari, 2017). The following paragraph dwells on the need for strategic skills planning to be linked to other critical management processes.

5.2.1.6 Strategic skills planning linked to other critical management processes

Results confirmed that strategic skills planning was linked to some though not all critical management processes. In their findings in Saudi Arabia; Jeda and Tarifi,

(2021), concluded that effective strategic skills planning demands linkages to critical management processes such as recruitment and remuneration. Creation of linkages between important functions in the training value chain ensures high quality graduates (Whitfield, Staritz & Morris, 2020). Additional findings postulate that the lack of alignment of objectives between the strategic skills stakeholders leads to the development of irrelevant skills (Hove, 2019; Khoza & Kembo, 2022; Kruss & Petersen, 2016). Consequence management is discussed in the following section.

5.2.1.7 Employees held accountable for poor strategic planning choices

The CHIETA and its strategic skills stakeholders did not hold employees accountable for poor strategic skills planning choices. When people know that they will be taken to task for poor strategic choices, there is a possibility that they may act in a way that minimises or avoids penalties or sanctions (Han & Hong, 2019). Multiple-partnerships and cross-cutting skills will be discussed in the section below.

5.2.1.8 Multi-partnership mechanisms and presence of cross-cutting skills in training programmes

Findings confirmed limited multi-partnership mechanisms for ensuring quality training and for augmenting the learning infrastructure. Partnering provides for organisations to focus on competencies possessed by an organisation. Additionally, the CHIETA did not incorporate cross-cutting skills in their training programmes. The effect of such omission is that learners are not adequately equipped to address modern complex business challenges. In a study conducted in Utah, in the USA, it was concluded that soft and cross-cutting skills added value to employees (Andrade, 2020). The section below discusses whether the CHIETA recognises progressive and different skills acquisition pathways.

5.2.1.9 Mechanisms to recognise progressive and different skills acquisition pathways

There were cases where mechanisms to recognise progressive and different skills acquisition pathways existed, but there was room for improvement. Some of the advantages of the recognition of multiple pathways for skills acquisition include competitive pricing, quality, and provision of learners with choices. The section below deals with culture. Modern trend is for organisations to focus on core competencies and sub-contracting non-core functions.

5.2.1.10 Culture allows for the recognition of key strategic concerns to emerge

From the findings, it is clear that the CHIETA and its strategic skills stakeholders' cultures did not allow for the recognition of key strategic concerns to emerge. Such an environment leads to the disenfranchisement of stakeholders. A liberal culture is amenable to acceptance of diversity of worldviews (Verkuyten & Kollar, 2021). The following section discusses whether training enhanced employment or earnings potential.

5.2.1.11 Training enhances employment and earnings potential

The research findings revealed that the training programmes offered by the CHIETA did not significantly enhance learners' employment potential neither did they improve the earnings potential for those that were already in employment. These are the two primary reasons why learners enroll for skills development. This finding is rather contradictory, especially for those already in employment. Whilst employers raised a concern that trained employees seek higher paying jobs elsewhere, employees responses were that they did not find the exercise beneficial. This might imply that employees lack a learning culture and thus find any excuses not to acquire skills. Society and community's view of TVETs is discussed next.

5.2.1.12 Society's view of TVETs

It was found that society has a negative view of TVETs. Historically, TVET institutions in South Africa have never been learners' preferred choice. This perception negatively impacts on TVETs recruitment efforts. Research findings by Tlapana and Myeki in South Africa (2020) confirm a high correlation between TVETs recruitment and social perception. Ansah and Attah (2019) made similar observations in Ghana. In Malaysia they introduced a project for the purpose of creating a positive image of TVETs it assisted in learner and employee recruitment (Omar, Ismail, Rauf, & Puad, 2020). Learner tracking is discussed next.

5.2.1.13 Learner tracking mechanism

The CHIETA's learner tracking mechanism was found not to be that effective. With sufficient learner data, a tracking tool would enable the CHIETA to optimally utilise its limited resources where it's needed most.

The absence of this data leads to resource misallocation as there is no justification for prioritising certain skills programs over others. The following section covers challenges in strategic skills planning.

5.2.2 Strategic skills planning challenges

Some of the challenges that were raised included a lack of career guidance and absence of role models in the case of previously disadvantaged learners. Another challenge was a lack of information on the relevant subject choices required to pursue chemical sector related qualifications. Most school leavers only became aware of the compulsory "maths and science" subjects when enrolling for tertiary studies. Another issue that was raised was the bureaucracy encountered in most of the CHIETA's registration processes including learner certification and skills development practitioner accreditation. Research findings in Malaysia stressed the importance of linking strategic skills planning to other organisational processes (Rehman, Mohamed & Ayoup, 2019).

It was also found that smaller companies did not have the luxury to release employees to attend training. The reason is that small companies employ very few staff who are expected to multi-task, more so at professional or technical level. The absence of such key personnel, though for a short period of time, would adversely affect production or service delivery. While Gyamfi and Stejskal (2020) ascribe innovation to knowledge acquisition, Ngoc-Tan and Gregar (2018); Rahimi, Rostami, Shad and Vafaei, (2017) take it further, reasoning that the acquired knowledge, needs an effective management system to realise the innovation. Research findings in India demonstrated the important role senior management played in the innovation process (Saiyed, 2019). Failure to appoint middle management as strategic innovation sponsors implies that employees will be slow and not motivated to take up the initiative and at times lead to complete avoidance of the innovation initiative (Hirte, 2018). Research findings by Carayannis and Morawska-Jancelewicz (2022) confirmed that organisational shared experiences were the main driving force behind evolutionary, organisational innovation. According to Guinan, Parise and Langowitz 2019), cross functional teams are crucial to the success of innovation.

The section below discusses the study's findings on strategic skills innovation and links them to reviewed literature. The discussion commences with the strategic skills

innovation construct under 5.2.3 and then delves into the individual questions of the construct explaining the findings in greater detail from section 5.2.3.1 to 5.2.3.6.

5.2.3 Strategic skills innovation

Findings on the construct were that though the CHIETA and some of its stakeholder companies do have sporadic incidents of innovation, they are not innovative organisations. Innovation is a pre-requisite for successful strategic skills development (Tirolli & da Cunha Lemos, 2021; Pisano, 2019). Sustainable innovation requires formalisation of the process including the development of policy and should also dictate how the organisation should search for new solutions and business ideas (Wilson, Maharaj & Maharaj ,2020). Organisational flexibility and design are discussed next.

5.2.3.1 Organisational flexibility and design

The finding on was that the CHIETA and its strategic stakeholder organisations were not flexible. Inflexibility implies a slow response to competiton as well as to customer changing demands. Research findings in Poland confirmed the importance of organisational flexibility in the innovation equation (Benkova, Gallo, Balogova & Mihalcova, 2019). Similar findings were made in Turkey (Beraha, Bingol, Ozkan-Canbolat & Szczygiel, 2019) and in Jordan (Shelash & Mousa, 2017). Seemingly contradictory research observations were made in New York, the USA, where a combination of flexibly and inflexibility was found to be key to innovation. In this instance, flexibility was found to be best at innovation idea generation whereas inflexibility was found to be suitable at the selection phase of innovation (Keum & See, 2017).

The CHIETA and some of its stakeholder companies were found not to be designed for innovation. There is empirical evidence advising that organisational strategy should inform structure (Lemus-Aguilar, Morales-Alonso, Ramirez-Portilla & Antonio Hidalgo, 2019; Waruwu, Asbari, Purwanto, Nugroho, Fikri, Fauji, Shobihi, Hulu, Sudiyono, Agistiawati, & Dewi, 2020). The section below discusses management's involvement in innovation.

5.2.3.2 Senior and middle management involvement in innovative initiatives

The involvement of senior and middle management in innovative initiatives was found to be negligible, and this points to a lacklustre organisational commitment to strategic skills innovation. Both levels of management play a crucial role in an organisation's strategy, (Singh, Gupta, Busso & Kamboj , 2021; Cao, Ouyang, Balozian & Zhang, 2020). The need for management's involvement in strategic initiatives was also supported by research findings at a multinational company operating in more than 70 countries worldwide (Tarakci, Ates¸ Floyd, Ahn & Wooldridge, 2018). Innovation knowledge and experience sharing is discussed below.

5.2.3.3 Sharing innovation knowledge and experiences

The finding was that the CHIETA and its strategic skills stakeholders rarely shared innovation experiences. This echoes the finding above and seems to confirm the absence of an innovative culture within the chemical sector. There is evidence that organisations benefit from shared innovation experiences (Arsawan, Koval, Rajiani, Rustiarini, Supartha & Suryantini, 2022; Kremer, Villamor & Aguinis, 2019). Innovative competitive edge is attained through knowledge internalisation and sharing (Herden, 2020). The following section discusses resources and innovation.

5.2.3.4 Resources and innovation initiatives

Results from Chapter 4 show that resources were not always made available for innovative initiatives. It is important that an organisation resources its innovative strategy and additionally that the resource allocation criteria be objective, focused and non-partisan. Haphazard resource allocation leads to sub-optimisation. Study findings in Poland (Wierzbicka, 2019) as well as in Mexico; Guerrero, Urbano and Herrera, (2019) confirm this assertation. Though the bulk of these studies referred to an organisation's own resources, Demirkan (2018), recommended that organisations with minimal to no internal resources should leverage collaborations with external research "partners" institutions and universities to compensate for this deficiency.

The German Mittelstand, rests on the same principle (De Massis, Audretsch, Uhlaner & Kammerlander, 2018). The role of external stakeholders in strategic skills innovation is discussed below.

5.2.3.5 External stakeholder involvement in innovation

Research results concluded that external stakeholder involvement in strategic skills innovation was limited. External stakeholders are an organisation's crucial knowledge source for enhancing innovation (Svensson & Hambrick, 2019; Loureiro, Romero & Bilro 2020; Svensson & Hambrick, 2019). Similar findings were observed in Mexico (Pyka, 2017) and in Finland (Albats, Alexander, Mahdad, Miller & Post, 2020). According to Nunes and Steinbruch, 2018; Toth, Torok and Balogh, 2018) the importance and superiority of external stakeholders' contributions to an organisation's innovative strategy in incontestable.

Creativity, autonomy and risk taking are discussed in the next section.

5.2.3.6 Encouragement of creativity, autonomy and risk taking

The CHIETA and its strategic stakeholders were found not to encourage creativity, autonomy or risk taking. Research conducted in the USA, concluded that high innovative culture organisations encourage employee creativity and were tolerant of mistakes (Serdyukov, 2017). A Nigerian company was found to be celebrating employee mistakes as a means of encouraging them to take innovation risks (Jamiu & Ndubuisi, 2017). According to Olsson, Paredes, Johansson, Roese and Ritzen (2019) opine that creativity and organisational leadership are the main factors determining innovation within an organisation. Collaborations are the subject of discussion in the following section.

5.2.4 Strategic skills collaborations

Findings were that collaborations though existing were weak. The different stakeholder classes hide hostilities which might render collaborations ineffective. There are no clear role clarifications which complicates management of the relationship. There was a trust deficit amongst the chemical stakeholders (Saqr, Nouri, Vartiainen & Tedre, 2020). Stakeholders were found to come from a diversity of professions. Whilst diversity in professions adds value, it requires heightened trust levels (Barrane, Ndubisi, Kamble, Karuranga & Poulin, 2021).

In the section below, strategic skills implementation is discussed. As with previous discussions in this chapter, the section commences with discussions on the strategic

skills implementation construct, 5.2.5. This will be followed by findings on individual questions of the construct to explain the findings in greater detail, 5.2.5.6.

5.2.5 Strategic skills implementation

The finding was that, though the majority of the CHIETA staff involved in strategic skills implementation had strategic skills implementation competencies, a sizeable number lacked change management and problem solving skills. One of the reasons was due to a lack of integration of strategic skills implementation at the strategic skills planning stage. In their research conducted in Namibia, Karlos and Nengomasha (2018:102) found that an understanding of change management was a critical success factor for strategic skills implementation. This is supported by findings in South Africa (Van Ginderdeuren, Bassett, Hanrahan, Mutunga & Van Rie, 2019) which concluded that lack of knowledge and experience were key barriers to strategic skills implementation. Additionally, findings by Sacramento (2018) as well as by Lyon, Cook, Brown, Locke, Davis, Ehrhart and Aarons (2018) confirm the positive effect problem solving capabilities have on strategic skills implementation. The section below discusses management's involvement in strategic skills implement.

5.2.5.1 Management involvement in strategic skills implementation

The findings of this study confirmed that though management at the CHIETA and its stakeholder companies were involved in strategic skills implementation, there was still room for improvement. Management's commitment to an organisation's strategic implementation initiative is a decisive factor for its success (Mansaray, 2019; Engle, Lopez, Gormley, Chan, Charns & Lukas, 2017; Karampour, Mohamed & Karampour , 2021). The role of management is to advance and monitor the key parts of the strategy, to ensure that there is effective communication, and that responsibility is delegated (Bunce, Grub, Davis, Cowburn, Cohen, Oakley & Gold, 2020).

Strategic skills implementation communication and simplicity is discussed next.

5.2.5.2 Communication and simplicity of the strategic skills implementation process

Findings confirmed that strategic skills implementation within the chemical sector was poorly communicated and was cumbersome. Findings in Kenya; Kihara, Bwisa and Kihoro (2017); Buya, Simba and Ahmed, (2018) confirmed the criticality of communication to strategic skills implementation success. Similar findings were made

in India, (Mathew, Sivaraman & Chandy, 2019; Sanad, 2018; in New Zealand; Berkovich & Eyal, 2017 and in Australia ; Moss, Butar, Hartel, Hirst & Craner, 2017).

Resource allocation for strategic skills implementation is covered in the section below.

5.2.5.3 Resource allocation for strategic skills implementation

Research results indicated that, though the CHIETA and its strategic skills stakeholders allocated resources for strategic skills implementation, it was only in some and not in all cases. An ill-funded strategic skills implementation strategy cannot be expected to make a difference to the chemical industry or the economy. The need for an objective resource allocation process was confirmed in research conducted in the USA; Zahay, Altounian, Pollitte and James, (2018) as well as in Kenya (Lemarleni, (Ochieng, Gakobo & Mwaura, 2017). Strategic skills implementation is not without challenges, this is discussed below.

5.2.6 Strategic implementation challenges

The major strategic skills implementation challenges were the insufficiently qualified public TVET lecturers, old infrastructure and outdated training equipment as well as inadequate funding. The recruitment of those already in employment was identified as a challenge as some of them lost income during the period they would be on training. The high cost of private TVETs was also mentioned as a barrier. Another issue that was raised was the bureaucracy involved in the CHIETA qualifications and skills development practitioner accreditation and registration with the QCTO. The challenge with the QCTO is the duration it takes to have both approved and registered. This disadvantages the CHIETA, the skills development practitioners, the employers and the learners.

Employers pointed to the lack of work-readiness of learners since this is not a component of the training programmes. Universities and TVETs focus on the delivery of theory with no opportunity for learner exposure to a real working environment. Such learners need a much longer time to transition from a desk to a work mentality. Strategic skills implementation processes needed to be simple for ease of implementation (Alharthy, Rashid, Pagliari & Khan, 2017).

5.2.7 TIPS managerial leadership framework

The Davinci Institute developed a managerial leadership framework, Technology, Innovation, People and Systems thinking (TIPS) and how it can add value to the strategic skills stakeholders. This is discussed below.

5.2.7.1 Systems thinking

Modern organisational challenges call for a systemic and multi-disciplinary approach to succeed. According to Steven (2018) systems theory highlights the importance of understanding an organisation's entire system and the underlying interactions of all the forces that constitute that system. The strength of systems thinking is its holistic approach which focus on interactions between the system components as well as the patterns that emerge from these interactions (York, Lavi, Dori & Orgill, 2019). In this study, all the variables identified have been proven, through causal relationships and hypothesis to be key to strategic skills development. The understanding of these independent variables and how they can be linked for the optimisation of strategic skills delivery can only be done through the application of systems thinking. Management of technology is discussed next.

5.2.7.2 Management of technology

Management of technology links engineering, science and management disciplines to an organisational plan, creating technological capabilities, with the potential of shaping and re-shaping an organisation's strategic and operational goals (Urban & Krawczyk-Dembicka, 2018). Furthermore, technology enables organisations to introduce new and improved products/services and or processes (Ardito, Petruzzelli & Albino, 2019). In this study, the need for the collection of accurate, reliable data from the different strategic skills stakeholders and related national entities including the department of home affairs, South Africa Revenue Services and department of labour was clearly demonstrated. Additionally, the need for comprehensive analysis of the collected data and the drawing up of informed and meaningful conclusions that assist strategic skills planning was equally amplified. All these processes demand that the CHIETA and its stakeholders invest in technology. The section below discusses innovation and knowledge management.

5.2.7.3 Innovation and knowledge management in skills development

Knowledge is recognised as one of the key distinguishing resources available to organisations (Farooque, Zhang & Liu, 2019). It is widely accepted that innovation adds value to customers and organisational knowledge (Moser, de Oliveira Ricardo & Bueno 2019; Grimsdottir & Edvardsson, 2018). Whilst Belgraver and Verwaal (2018) opine that organisational innovation levels are biased in favour of big companies, Dodge, Dwyer, Witzeman, Neylon and Taylor (2017) believe that culture is the only crucial factor in innovation. Dimitrova (2018) identified these cultural factors as; creativity, autonomy, risk taking attitude and teamwork. The importance of research production institutions to the innovation matrix cannot be overemphasized (Sivam, Dieguez, Ferreira & Silva, 2019; Carrier & Gartzlaff, 2020; daSilva Vaz, Batistaand & Paixão, 2019; Lewandowska, Pater & Cywinski, 2019). All modern training programmes should have curricula that includes innovation skills set (Cassem (2018).

An open innovative culture is one that promotes a diversity of influences from both internal and external stakeholders (Yun, Zhao, Jung & Yigitcanlar, 2020). Effective innovation requires that the innovative process be formalised, and the organisation must have policies on the process the organisation follows in searching for new solutions, synthesizing business ideas, concepts and designs (Arundel, Bloch, & Ferguson, 2019). It is interesting to note that Akpan, Nebo and Akaeze (2018) propose that the resources utilised for purposes of innovation should not be classified as an expense, but rather as an investment.

The main driving force behind organisational evolutionary innovative perspectives is the shared experiences between the different organisational management layers (Soete, 2019). While acknowledging the existence of several barriers to innovation such as high cost and risk, Carvache-Franco, Carvache-Franco & Carvache-Franco (2022) identified a lack of skills as the major constraint. According to Ngoc-Tan and Gregar, (2018); Walecka-Jankowska, (2015); Rahimi, Rostami, Shad and Vafaei, (2017) knowledge management system is key to the creation of an innovative organisation.

The study demonstrated the need for an innovative approach to strategic skills planning and implementation. Changing consumer demands and global competition shorten product and processes life cycles and this renders skills redundant. This

makes innovation a business imperative. Innovative skills will ensure learners secure employment and enhance earnings potential as well as increase the upward mobility chances to those that are already in employment. Additionally, innovation in strategic skills development will lead to reduced training costs, product development costs and increased new product and service launches.

5.2.7.4 People as an important factor in innovation

Its only through a skilled human resource that an organisation is capable of sustaining innovation (Alnidawi, Alshemery & Abdulrahman, 2017). The more volatile, unpredictable and uncertain the global environment, the more organisations must rely on their employees as a critical resource to create a desired future (Davis & Simpson, 2017). Whilst it is important that organisations aim at the recruitment and retention of the right employees, employers should ensure that these employees remain committed to the employing organisation. This commitment has the potential to positively affect organisational performance through psychological contract (Anggraeni, Dwiatmadja & Yuniawan, 2017). When employees understand and share an organisation's vision and mission, their resolve and commitment to the business initiatives becomes unquestionable. The success of the CHIETA and its strategic skills stakeholders is inextricably linked to a motivated staff complement driving the organisation's vision.

Culture was identified as crucial to innovation. This is discussed below.

5.2.7.5 Culture as a significant factor in innovation

While there is no general consensus on the definition of culture, there is convergence on the critical role culture plays in shaping an organisation's strategic direction (Lee & Chung, 2020; Carvalho, Sampaio, Rebentisch, Carvalho & Saraiva, 2019). For purposes of this study, organisational culture is defined as the shared values and beliefs that help organisational members understand how their organisations function and provide them with norms of behaviour (Tran, 2021). The collision of culture and way of thought is fertile ground for the generation of new ideas (Chin, Meng, Wang, Shi & Zhang, 2022; Freire, 2017). The main cultural aspects found to have an impact on innovation are; effective communication, self-efficacy, innovative culture, climate for innovation and innovative behaviour (Roffeei, Yusop & Kamarulzaman, 2018). Whilst the above cultures should be promoted, bureaucratic and military cultures are

disablers that stifle innovation and should be discouraged (Ferrara, 2017; Wipulanusat, Panuwatwanich, Stewart & Sunkpho, 2019).

The section below discusses organisational agility, which is important in skills development.

5.2.7.6 Organisational agility and energy crisis in South Africa

Organisational agility refers to the ability to both recognise and effectively respond to unexpected changes in the environment through deployment and reconfiguration of internal resources thereby attaining competitive advantage (Zitkiene & Deksnys, 2018). The five critical abilities for Organisational agility are; anticipating change, generating confidence, initiating action, liberating thinking and evaluating results "AGILE" (Ghosh & Barman, 2021). A certain level of organisational capabilities is required if an organisation has to adapt and respond in an efficient manner (Krawczyska- Zaucha, 2019). The Agile model highlights the capabilities required of leaders so they can embrace agility and take advantage of opportunities during times of uncertainties. These capabilities should be applied in the following core business areas, people, process and technology. Agile leadership is a practical and tactical response for navigating unexpected pandemics (Childs, Turner, Sneed & Berry, 2022). Those organisations that have been agile have managed to survive and thrive, whereas those that were slow, have gone under.

South Africa's economic development is hampered by the energy crisis that is facing the country as a result of the collapse of ESKOM (Masondo, 2022; Ren, Hao, Xu, Wu & Ba, 2021).

The costs of the energy crisis manifest themselves in social, economic and environmental deficits (Jack & Jack, 2022). The crisis presents a challenge in the country's efforts to reach the 2030 renewable energy target (Mukoro, Sharmina & Gallego-Schmid, 2022).

5.3 Summary of the chapter

5.3.1 Strategic skills planning

All the 5 research objectives as stated in chapter 1 were addressed. The CHIETA and its strategic stakeholders were found to practice strategic planning to a limited extend.

The second research objective was to ascertain the level of collaboration among the strategic skills stakeholders. The finding was that though collaborations existed, the level of collaboration was too low to have any impact on the strategic skills trajectory in the sector.

The third objective was to ascertain the level of strategic skills innovation within the chemical sector. The key findings were the near absence of an innovative culture in a majority of the organisations within the chemical sector and the CHIETA. The fourth objective of the study was to ascertain the level of strategy implementation skills within the CHIETA. In respect of this objective, most of the CHIETA staff were found not to have strategic implementation skills, this was evidenced by lack of change management and problem-solving skills.

The fifth objective was to ascertain the factors that impede strategic skills implementation. The finding was that there were numerous factors that impede the chemical sector in effectively implementing the strategic skills plan.

The final objective of this study was to recommend a strategic skill planning and implementation framework for the CHIETA and its stakeholders. This framework was developed and is presented and fully discussed in chapter 6.

The CHIETA practices some elements of the DaVinci Institute's management and leadership framework, TIPS. The extent to which this is done is limited in respect of all the indicators. There are no clear metrics to measure or to track skills acquisition and utilisation. The stakeholders were found to be engaged, but there was a trust deficit. An environment which lacks trust is not conducive to collaborations and renders meaningful engagement futile. Trust is the foundation for the creation of an environment that is conducive for effective collaborations and co-creation. In respect of organisational agility, the CHIETA was found not to be agile and this lack of agility results in slow response to strategic skill changes. The CHIETA's critical business functions are not properly aligned, and this results in cost and effort duplication. The lack of appreciation of systems thinking implies that the CHIETA fails to capitalise on interrelated and interdependent parts of the strategic skills ecosystem.

5.4 Conclusion

In this study, the researcher determined, according to the existing theory, each of the conclusions relating to the four hypotheses. In addition, the associated research questions were validated in this chapter. The implications for the hypotheses and the respective research questions and findings were commented on. Though the hypotheses came to one conclusion, there were cases in which responses to research questions and interview schedule were at variance, thereby informing the researcher's ontology and contributing to new knowledge. The chapter covered the Davinci Institute's TIPS managerial leadership framework and the CHIETA was found to be lagging in most areas. There was no finding made that contradicted existing theory. Theory was supported by additional knowledge, that is unique to the setting of the CHIETA and its stakeholders.

CHAPTER 6

CONCLUSIONS, SUMMARY AND RECOMMENDATIONS

6.1 Introduction

The main aim of this study was to develop a strategic skills planning and implementation framework for the CHIETA. The research's aim was achieved. The strategic skills planning and implementation framework that was developed can be used in understanding the variables that will lead to the development of relevant, in demand strategic skills, which if implemented as recommended, will benefit employers and employees in the sector. By so doing, it will address issues of under employment and improve return on investment on skills development to the sector.

This chapter introduces an overview of the study, which is followed by a presentation of the developed strategic skills framework. An analysis of how each chapter has contributed towards addressing the research questions follows after which a summary of the extent to which the research objectives were met is presented. The final section discusses the limitations of the study and ends with an overview of opportunities for further research.

6.2 Overview of the study

Despite evidence of minimal return on investment in strategic skills development in the country, huge financial resources are still being channelled towards this endeavour with little to no impact on the employment situation in the economy.

To investigate this, the researcher developed a set of research objectives and to meet these stated objectives, specific research design decisions were required.

The methodological approach that was utilised in this study was a mixed methods case study. Mixed methods were applied to minimise the limitations associated with choosing either method and to strengthen the conclusion. The case study sought to gather rich insights through interviews and questionnaires, this was bound to strategic skills planning and implementation. The sample population included the CHIETA staff and its strategic skills stakeholders. Research participants were selected based on their knowledge and experience on the subject matter. Both purposive and random sampling techniques were applied to select the participants. Purposive sampling was aimed at the CHIETA employees as not all staff are strategic skills practitioners. Random sampling technique was aimed at the strategic skills stakeholders as all are strategic skills practitioners. The research instruments that were used were questionnaires for the quantitative approach and interview schedule for the qualitative approach. Quantitative data was analysed using descriptive and inferential statistics whilst thematic analysis was utilised for qualitative data. A description of the recommended framework is presented below followed by a figure of the said framework.

6.2.1. Strategic skills planning and implementation framework

The framework outlines how strategic skills planning and implementation can be effectively managed for practical skills delivery. This framework is informed by research findings on all the constructs from Chapter 4. On the extreme left are the constructs, at the centre are the key actions that are necessary to drive the construct and to the right are the enablers. All these, vis, constructs, key actions and enablers were informed by the reviewed literature.

This study suggests two domains:

- Strategic skills planning and implementation procedures.

- Required enablers to ensure organisational readiness to support strategic skills planning process.

Stage 1 (Table 6.1) is the strategic skills planning and implementation procedures which consist of four phases. These phases are simultaneously chronological and iterative since the CHIETA and the stakeholders needs, requirements and expectations are hardly constant.

Table 6.1: Strategic skills planning and implementation

STATEGIC SKILLS PLANNING and IMPLEMENTATION		
Stakeholders	**Output**	**Enablers**
Employers	WSPs, ATRs	Collaborations Innovation
Unions	WSPs, ATRs	
Skills development practitioner	Curriculum	
Research Institutions	Latest developments in industry	
Industry experts	Practicality of solutions	

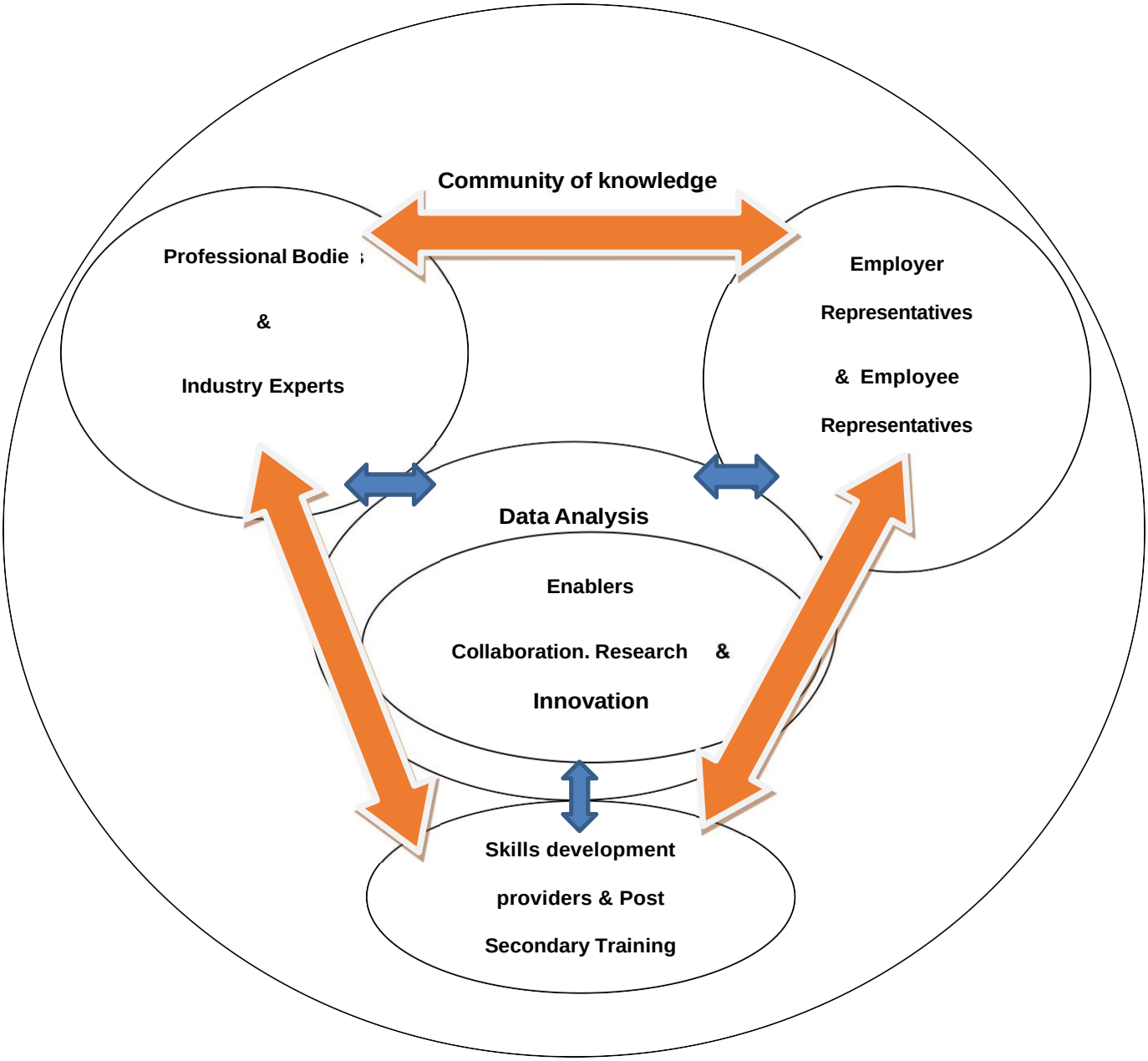

Figure 6.1: Strategic Skills Planning and Implementation

There are two enablers that were identified for strategic skills development. These are not chronological, and the double-sided arrows demonstrate the interdependence between all the strategic stakeholders in the skills development eco-system. Research was identified to be critical to the success of strategic skills planning in that only relevant and in demand strategic skills qualifications and professions are developed.

The strategic skills innovation phase involves creating knowledge management systems, creating a climate and culture for innovation, outlining a success/failure detection mechanism in innovation and formalising the innovative process.

Collaborations in the strategic skills development phase entail initiating strategic partnerships, encouraging open and genuine strategic skills dialogue, implementing a participatory stakeholder management approach, role clarification and defining external (client/stakeholders) satisfaction measurements. It is imperative to know that the entire process of creating a strategic skills development model rests on the TIPS management framework. The recognition of information technologies, ideation and innovation, the acceptance of human resources as key to the strategy, and a systemic comprehension of the socio-economic dynamic of the activities in the skills ecosystem, lends credence to the TIPS framework.

Strategic skills implementation is the final phase of the proposed model. This phase includes all the other three phases; planning, collaborations and innovation. It entails the actioning and calibration of the entire strategic skills value chain. The ideal situation is an organisational structure that supports strategic skills development whilst at the same time scanning the environment and maintaining a balance. Strategic emerging skills are anticipated, workers are re-trained and learners go through training programs that equip them with skills that are required by the sector. Strategic skills planning must be linked to an organisation's critical functions. The sustainability of this framework is wholly dependent on the quality of data collected and analysed.

6.2.2 Strategic skills development and Return On Investment (ROI)

ROI measures the estimated benefits from a given investment and goes beyond simple profitability assessments (Schoukroun-Barnes, Duchars, Bartolowits & Sarno, 2019). It is important that at the end of any project, return on investment be ascertained. ROI for this study is detailed below. The sections below will discuss ROI to the CHIETA, the society and to the researcher.

Organisational ROI

The recommendations made in the study have the potential to improve the CHIETA in the following ways:

1. Provide more relevant strategic skills offerings that meet industry needs: The recommendations to improve strategic skills planning, collaboration, innovation and implementation within the CHIETA could lead to the development of strategic skills offerings that are more aligned with the needs of the chemical sector. Employer organisations would benefit through cost savings, increased quality and recruitment of work ready leaners. Employees and learners would benefit by acquiring relevant in demand qualifications commanding high salaries and be provided with ease of mobility.
2. Increase participation of member companies: This would expand the reach and impact of the CHIETA's programmes. stakeholders, thereby providing relevant and in demand skills at a reduced cost. The CHIETA strategic skills stakeholders might benefit as there will be a ready pool of employable learners who can be readily absorbed within the workforce with the minimum of disruption to production. The absorption of these new learners with the requisite skills will lead to lower production costs, innovative ways of conducting business production and overall competitive products. Other benefits that might accrue are seamless linkages between business units which will lead to synergies within the sector.
3. Improve quality of skills programmes: Involving industry experts and research institutions, as recommended, could help improve the standard and relevancy of the CHIETA's qualifications and skills programmes. This could boost the employability and productivity of learners.
4. Foster closer collaborations: The recommendations to clarify roles, enhance transparency and simplify communication protocols could help foster closer collaborations between the CHIETA and its stakeholders. These collaborations are needed for effective strategic skills development.
5. Become more innovative: Implementing the recommendations to create an innovative culture, appoint innovation champions and make resources available for innovation could help the CHIETA embrace innovation and offer more

innovative strategic skills programmes. This could keep the programmes relevant and meet changing industry needs.

6. Improve strategic implementation: Implementing the recommendations to retain and upskill strategic implementers, improve communication and integrate implementation strategies with human resource practices could boost the CHIETA's strategic implementation capabilities. This could lead to more efficient programme delivery and better outcomes.
7. Make better use of data: Implementing the recommendations on data sharing across organizations and improving research capabilities could help the CHIETA make better use of data and research to inform its strategic skills planning and programmes. This could enhance the relevancy and effectiveness of the skills programmes.

Societal ROI

From a societal perspective, this study presents an opportunity through employment creation. Then as people get employed, they earn an income and learners gain personal worth whilst at the same time ridding the communities of the social ills brought by unemployment. The skilled learners would have attained not only technical but cross-sectional skills which will assist them in decision making as members of communities. This benefits the economy and society at large.

Personal ROI

The study bore a return to the researcher in the form of personal enrichment in the field of study. The researcher has been equipped to contribute to strategic skills planning and implementation as they apply to the chemical industry in practice and theoretically to strategic skills deliberations in general.

6.2.3 Research Objectives

In chapter 1, section 1.5, the study set out to address the following study objectives:

1) To ascertain whether the CHIETA and its stakeholders practice strategic skills planning;
2) To determine the level of collaboration between the CHIETA and its strategic skills stakeholders;

3) To ascertain the level of strategic skills innovation within the CHIETA and its stakeholders;
4) To determine the level of strategic skills implementation within the CHIETA and its strategic stakeholder companies;
5) To ascertain the factors that impede strategic skills implementation;
6) To recommend a framework that improves strategic skills planning and implementation to the CHIETA. The following section discusses whether the objectives as set out in chapter 1 were met.

6.2.3.1 Research Objective 1

The response to the first research objective, to ascertain whether the CHIETA and its stakeholders practice strategic skills planning was slightly above average (56%). The main findings in this regard were the lack of knowledge on the part of some of the strategic skills planners as well as junior representation from the stakeholder constituencies on the CHIETA strategic skills structures. There was limited environmental scanning done. Additionally, not sufficient resources were allocated for strategic skills planning. The CHIETA was also found to be inflexible in its offerings. Further, there were no linkages identified between the critical management processes within most of the organisations in the chemical sector. In terms of the qualifications there were three main findings. Some of the qualifications and skills programmes lacked relevance and were outdated, most of the qualifications were supply and not demand driven.

Additionally, industrial experts were not involved in all qualifications development. The CHIETA should invite stakeholders to strategic skills development workshops and empower them on the subject. Additionally, the CHIETA should approach targeted member companies to encourage participation by senior members since it is the staff at such high levels who are responsible for organisational strategy. These representatives would then add value to the strategic skills planning process. The CHIETA should make effort to include industry experts in all the various strategic forums. Finally, the CHIETA and its stakeholders should do environmental scanning to identify the relevant skills that are in demand, this would assist in the CHIETA focussing the limited resources on the required skills which add value to both labour and employers.

6.2.3.2 Research Objective 2

The second research objective was to ascertain the level of collaboration among the strategic skills stakeholders. The finding on this construct was that the level of collaborations was low. The reasons provided were lack of trust among the different stakeholders, the absence of proper consultation and poor as well as ineffective communication. An additional finding was the lack of role clarity on the part of the stakeholders which brought about confusion and mistrust. This gap could be filled through the holding of stakeholder workshops. At these workshops, the importance of collaborations would be emphasised.

6.2.3.3 Research Objective 3

The third research objective was to ascertain the level of innovation in skills development. Key findings on this construct were the absence of an innovative culture in the majority of the organisations within the chemical sector and the CHIETA. This was confirmed in that senior management was not involved in the strategic skills' innovative initiatives, neither was middle management who were appointed as strategic skills champions. The different organisational management layers did not share innovative experiences. Innovation was not well resourced and there was minimal external stakeholders' contribution to innovation. The findings indicated that the CHIETA and its member companies did not encourage creativity, autonomy, risk- taking and teamwork. Admittedly, innovation is a recent phenomenon. The first initiative would be for the CHIETA and its strategic skills stakeholders to formalise innovation within the organisations. The strategic skills stakeholders would then need to train senior and middle management on innovation. This should be followed by entire organisation human resources undergoing innovation training. Ultimately this should be followed by formalisation of innovation within the organisations. The ultimate goal is to introduce innovative cultures within the chemical stakeholder companies.

6.2.3.4 Research Objective 4

The fourth research objective was to ascertain the level of strategy implementation skills within the CHIETA. Most of the CHIETA staff lacked strategic implementation skills, including change management and problem-solving. There was an absence of a skills development culture among most of the employees and some of the employers. There was also a high staff turnover owing to the five-year CHIETA

licencing. There is need for the CHIETA to train and mentor staff on strategic skills implementation.

6.2.3.5 Research Objective 5

The fifth research objective was to ascertain the factors that impede strategic skills implementation. Among the identified strategic implementation impediments were the bureaucratic processes in respect of assessor and moderator registration. The skills development practitioner accreditation and certification processes were identified as impediments. The CHIETA was found to be nonflexible and its processes were reported to be too administrative. Poor communication and company retrenchments were also mentioned. Additionally, some quarters of the stakeholders were reluctant to release employees from production for training. This objective could be met through the identification of those staff members who lack this skill. They could be assisted with training and be partnered for mentorship to experienced and knowledgeable colleagues within the organisation.

6.2.3.6 Research Objective 6

The final objective of this study was to recommend a strategic skill planning and implementation framework for the CHIETA. This framework was developed, and it was fully explained in this chapter.

6.3 Implications of the study

6.3.1 Implications for theory

There is considerable literature about strategic skills in the Western and Eastern countries. This thesis adds to the current stream of literature by bringing an African perspective based on a South African context. Few strategic skills studies focus on how strategic skills planning, innovation, management of technology, and collaborations could contribute to the mainstream strategic skills development. This study demonstrates the centrality of these factors to effective strategic skills planning. The study further emphasises the importance of strategy implementation skills to effect change. The study further demonstrates the challenges public entities face through bureaucracy. The theoretical developments to address the ramifications of bureaucracy could be considered and so are the implications for researchers when developing theory based on findings from sequential mixed methods designs.

Additionally, the complementary use of qualitative and quantitative survey data in a mixed methods research study provides rich information that may inform the development of similar research initiatives thus enhancing research rigour.

6.3.2 Implications for strategic skills practitioners

Strategic skills planning should be a flexible, stakeholder-inclusive and employer- driven process that is continually updated with new information (Jasti, Livesey, Oppenheimer & Boyce, 2019). Content, context and process are important if the objective is to deliver on relevant and quality skills that match industry expectations. Demand-driven programmes would ensure that the CHIETA and by extension, the SETAs produce learners who are in demand and who are readily absorbed by the industry and/or who succeed in creating self-employment.

6.4 Recommendations

6.4.1 Strategic skills planning

Research findings were that though the CHIETA and its strategic skills planning stakeholders practiced strategic skills planning, it was not at the level that would make a difference to the economy. There were a number of interventions that were required, and these are presented below. The recommendation is that an employer awareness campaign strategy needs to be developed as a way of encouraging more member companies to be actively involved in strategic skills planning. The CHIETA needs to coordinate such campaigns and they need to understand why 67% of the companies are not partaking in strategic skills development. The CHIETA, together with the employers and the skills development providers need to develop the skills-set that is required for representatives to qualify for nomination to any of the skills forums. This could include minimum experience and qualifications as determined by the respective chamber. Additionally, workshops could be conducted to build the capacity of strategic skills stakeholders. The issue of bringing industry-relevancy to the CHIETA programmes could be addressed through two approaches, namely building research capacity and the mandatory incorporation of industry experts in the strategic skills planning process. Research capacity could be extended in one of two ways, that is, boosting internal research capacity or, where this is not possible owing to budgetary constraints, through collaborations established with external research institutions such

as the Council for Scientific and Industrial Research (CSIR) and other institutions of higher learning, including universities.

The appointment of senior industry representatives to the CHIETA board needs to be considered. The representation at senior level adds agility to the process as these are the decision-makers in the industry and they are aware of their companies' future human resource requirements. They also command respect from their peers. It is further recommended that the roles of the different stakeholders must be clearly defined, specifically, that of the government, the employers, the CHIETA and the labour sector. The critical management processes such as recruitment and remuneration within the CHIETA and the sector need to be linked so as to maximise on synergies and reduction of costs. One such area that could have an immediate benefit is the linking of all discretionary funding to research. This would increase the return on investment and minimise the missed opportunities.

It is further recommended that the CHIETA, its member companies and similar institutions, including the SARS and the Department of Home Affairs, share the workforce data bases. Better use of technology in skills would ensure that the CHIETA and the sector are at the forefront in respect of changes.

6.4.2 Strategic collaboration in the chemical industry

Research confirmed the existence of collaborations in the skills partnership; however, the researcher would recommend greater transparency as a tool to enhance trust. The recommendations made above in respect of role clarity would also ensure that there is no encroachment on another stakeholder's responsibilities.

There is a need for clear lines of communication between the CHIETA and all the skills stakeholders. A simplification of the communication protocol would eradicate bureaucracy. This could mean the identification and classification of the stakeholders according to their communication requirements. This would eradicate the cases where communication is sent to an irrelevant audience.

6.4.3 Strategic innovation in skills development

The overall research findings were that the strategic skills innovation was negligible. The researcher recommends that the CHIETA and its stakeholders should create an innovative culture. A skills innovative culture allows for internal and external knowledge sources to develop new services and products through the exploration and identification of innovative opportunities that create value (Lam, Nguyen & Tran, 2021:66). The starting point would be the appointment of senior management as innovation initiators. The middle management also needs to be appointed as innovation champions. The CHIETA and its member companies need to adopt an open innovation culture where external stakeholders participate in innovative initiatives. Finally, the CHIETA and its stakeholders should make resources available for innovation.

6.4.4 Strategic implementation skills in the chemical sector

In respect of strategic skills implementation, the finding was that this skill, though available, was not across the organisation. The researcher recommends that the CHIETA devises a programme to retain strategic skills implementers and also upskill those who lack in this regard. This would be informed by a skills audit. The effectiveness of this endeavour would be measured through company feedbacks and also through the quality of monitoring and close-out reports. The CHIETA could also improve on its strategic implementation communication by identifying the right audience and relaying relevant information to the different stakeholder groups. The CHIETA and its member-companies are advised to integrate human resource recruitment and remuneration with the implementation strategy. The researcher further recommends that the CHIETA and its stakeholders must provide resources for strategic skills implementation. A simplification of the strategic skills implementation process would add value. An additional recommendation is that the CHIETA establishes a communication protocol and introduce an alternative mode of learning for smaller companies to encourage them to implement strategic skills projects, for example, e-learning. The researcher further recommends a funding model that cushions the employees financially for the periods they are attending training. This does not necessarily need to be equivalent to the learners' salary.

The streamlining of the learner, assessor and moderator registration and the accreditation processes would assist in the elimination of bureaucracy.

6.5 Future research

This study has provided some reasons why it is important for the CHIETA to involve its stakeholders in strategic skills planning, innovation and implementation. One of the areas that would need attention in the future is more exploratory work to investigate the reasons for South Africa's structural unemployment. Another area that could be researched on relates to the challenges faced by the post-school education and the training graduates. The CHIETA certification challenges is an area that could be explored.

6.6 Limitations of the research

Notwithstanding the diligent design of this study, there were still some limitations. The most notable was the lack of access to data from the MeRSETA. The researcher had obtained clearance for data collection from the then CEO and a list of contactable persons had also been made available. However, there were internal dynamics at the SETA that made data collection impossible. This resulted in a change of the research from a multiple to a single case study. Further, the research was conducted at the CHIETA, a type of a public entity. This raises questions as to whether these findings can be generalised to the other public entities in South Africa.

There was a real possibility that the response rate could be low. This was confirmed as only 110 out of 200 questionnaires were completed. This was expected for three major reasons. First, there were time constraints on the part of the company representatives as they were full time employees. Then there was an absence of a learning culture in some organisations and this was demonstrated through the huge neutral responses. A considerable number of the chemical sector companies consider the payment of skills development levy as part of the cost of doing business and are not willing to participate in any CHIETA endeavours. The low response rate presented a challenge in generalising the findings. From both a practical and cost perspective, the researcher had to develop a questionnaire that covered the essentials, thus not every possibility in strategic skills planning, innovation, collaboration and implementation could be covered.

The inclusion of more factors would have meant a longer time frame though there is no evidence that the results could have been different. The effects of the factors that were not included are difficult to estimate.

6.7 Conclusion

This research presented the reality that the CHIETA is trying, though lagging in its endeavour to provide strategic skills to the chemical sector. This realisation becomes a motivation for acknowledging the required interventions to drive strategic skills planning and implementation in the sector. While strategic skills planning and implementation, collaborations and innovation are already practiced by the CHIETA and its stakeholders, their motivation is more compliance than delivery oriented. The researcher suggests that the utilisation of the model developed in this study would be beneficial to the sector. Operationalisation of the model would increase the relevancy, increase innovation to the strategic skills offering. This strategic skills offering would have been collaboratively developed and implemented by strategic skills stakeholders. The developed and the implemented strategic skills should meet both organisational as well as learner expectations. Ultimately, this would result in job creation, as well as enhanced earning capacity for workers thereby improving their socio-economic standards and increasing profitability to the companies in the chemical sector.

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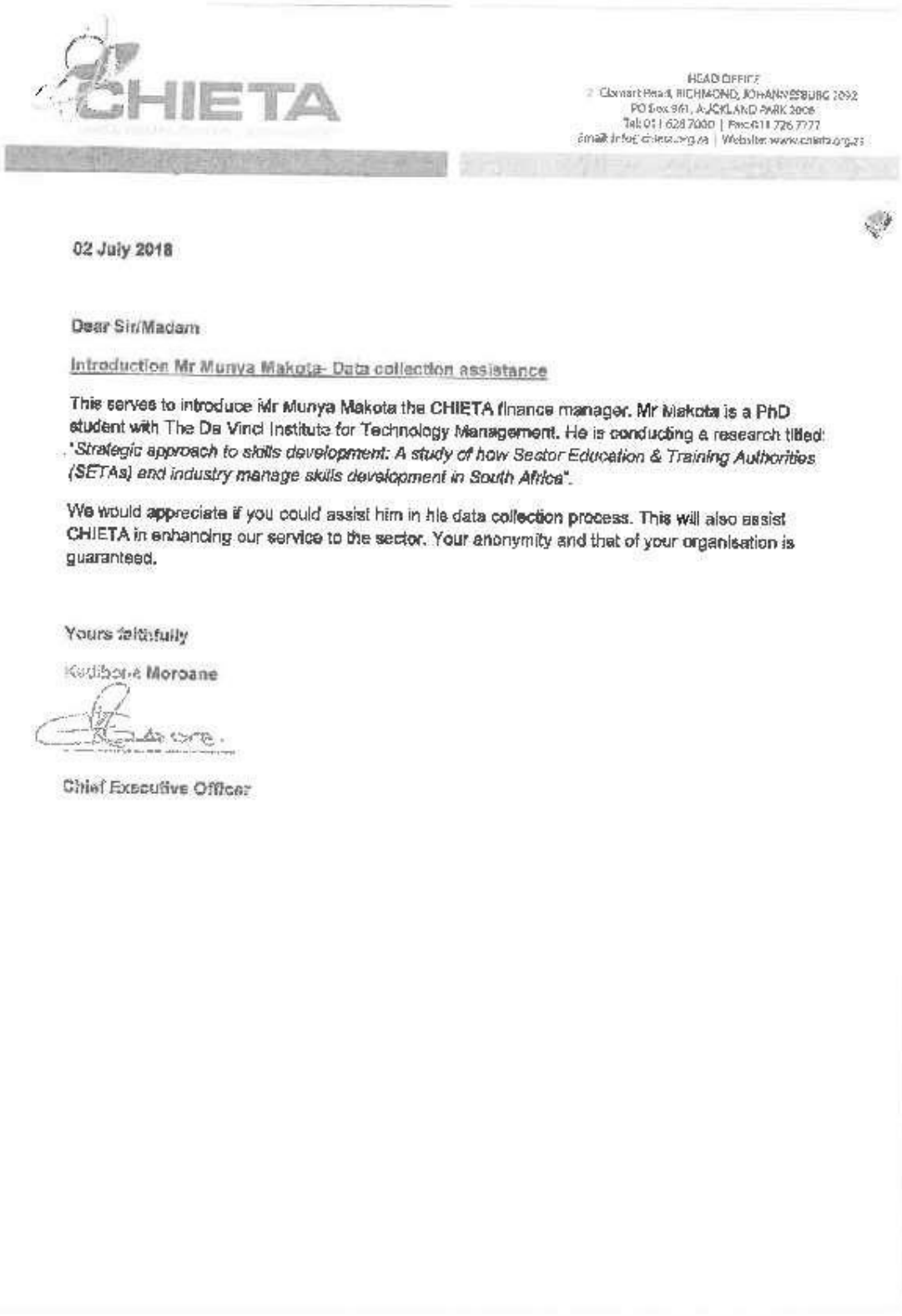
Appendices

Appendix A: Letter of Approval from the CHIETA



CHIETA

HEAD OFFICE
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02 July 2018

Dear Sir/Madam

Introduction Mr Munya Makota- Data collection assistance

This serves to introduce Mr Munya Makota the CHIETA finance manager. Mr Makota is a PhD student with The Da Vinci Institute for Technology Management. He is conducting a research titled: "*Strategic approach to skills development: A study of how Sector Education & Training Authorities (SETAs) and industry manage skills development in South Africa*".

We would appreciate if you could assist him in his data collection process. This will also assist CHIETA in enhancing our service to the sector. Your anonymity and that of your organisation is guaranteed.

Yours faithfully

Kedibone Moroane

Chief Executive Officer

Appendix B: Ethics exemption

The Da Vinci Institute for Technology Management (Pty) Ltd
PO Box 185, Modderfontein, 1645, South Africa
T e l + 2 7 1 1 6 08 1 33 1 F a x + 27 1 1 6 0 8 1 3 8 0
www .davinci.ac.za

Date: 21 June 2022

Dear Mr Makota Munyaradzi

Supervisor: Dr Linda Chipunza

Ethics Exemption: (Student number: 7442)

Doctor Of Philosophy in the Management of Technology and Innovation

This to confirm that ethics approval was not required during that time, but since then introduced. Hence a note has been made on your file in this regard, attaching the consent letters. During the examination process the following note will be shared with examiners:

The student collected data without ethics approval. Based on the motivations received from the student and supervisor(s), as tabled and discussed at a Research and Ethics Committee meeting held in 2021, the student was allowed to continue with the study. Considering the circumstances presented, the student and supervisor(s) were instructed to include a detailed explanation of how the study aligned to and dealt with all ethical principles and procedures impacting participants/respondents, the researcher(s), the institution, and research methodology employed in the study.

Kind Regards,

Prof HB Klopper

Executive Dean: Research and Institutional Partnerships

Tel: +27 11 608 1331

The Da Vinci Institute for Technology Management

Appendix C: Statement of Editing

LoveToEdit

You Write. We Edit. You Love it.

05 August 2023

TO WHOM IT MAY CONCERN

RE: CONFIRMATION OF LANGUAGE EDITING SERVICES: MUNYARADZI MAKOTA

I confirm that I have done language editing for Munyaradzi Makota's thesis titled:

STRATEGIC APPROACH TO SKILLS DEVELOPMENT: A CASE STUDY OF HOW SECTOR EDUCATION AND TRAINING AUTHORITIES AND INDUSTRY MANAGE SKILLS DEVELOPMENT IN GAUTENG, SOUTH AFRICA

The thesis now conforms to the Da Vinci Institute's editing standards.

Yours sincerely

Moyo

Lynn N. Sibanda Moyo

Tel: 011 050 0376

Mobile: 071 989 0983

Email: lynn@lovetoedit.co.za

Member of the Professional Editors Guild

Professional EDITORS Guild

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Appendix D: Questionnaire

Question 1& 2: Are you an employee or external stakeholder of the CHIETA and which stakeholder constituency do you represent?

Employee	
Employer	
Government	
Skills development provider	
Union	

Question 3: For how long have you been involved in strategic skills development?

Less than 10 years	
10-14 years	
More than 15 years	

Question 4: Does your organisation have a strategy unit?

Yes	
No	

Question 5:Are you involved in strategic skills development?

Yes	
No	

Question 6: How many employees does your organisation employ?

<50 Employees	
51-149 Employees	
150+ Employees	

Question 7: In which region are you based?

Gauteng	
KwaZulu Natal	
Western Cape	
Eastern Cape	
North West	
Mpumalanga	
Free state	

Question 8: Are you aware of the CHIETA's vision and Mission statements?

Yes	
No	

Question 9:Is there wide participation in the development of the CHIETA's vision and mission statements?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 10:Is the CHIETA's vision statement clear?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 11:Is the mission statement well disseminated to all stakeholder?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 12: Do stakeholders own the CHIETAIs the mission statement?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 13: Do stakeholders understand the purpose of strategic skills planning?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 14:Are strategic skills planners knowledgeable about strategic skills planning and skills development?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 15:Is the strategic skills planning process an inclusive process?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 16: Are middle managers appointed as strategic planning champions in strategic areas?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 17: Does your organisation perform comprehensive environmental scanning for strategic skills planning?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 18: Do strategic skills planners use skills demand drivers in strategic skills planning?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 19: Do strategic skills practitioners consider emerging and productive sectors in strategic skills planning?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 20: Does the CHIETA transform collective intelligence through strategic dialogue?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 21: Are the CHIETA strategic skills solutions customer centred?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 22:Does the CHIETA measure predetermined indicators in strategic planning?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 23: Are resources allocated for strategic skills planning?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 24: Is there a link between strategic skills planning and other organisational processes?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 25: Is strategic communication consistent, transparent and through multiple channels?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 26: Does the CHIETA culture allow for the emergence of key strategic skills concerns?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 27: Does your company benchmark strategic planning?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 28: Are CHIETA employees held accountable for poor strategic choices?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 29: Is strategic implementation incorporated in strategic skills planning?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 30: Does the chemical industry apply scenario planning in strategic skills planning?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 31:

What is the social image of vocational education and training institutions?.....

Question 32: What is the effect of skills training on employment and earnings potential?

Question 33: Does the CHIETA skills curricula incorporate soft and cross-cutting skills in the training programmes?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 34: Is there a multi-partnership mechanism to ensure quality training and learning infrastructure?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 35: Are there mechanisms to recognise different and progressive skills acquisition pathways?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 36:Does the CHIETA have a learner tracking mechanism?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 37:Does the CHIETA practice strategic skills innovation?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 38:Is your organisation flexible?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 39 :Is your organisation designed for innovation?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 40: Does the CHIETA regularly develop new training products?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 41: Does the CHIETA and its stakeholders have an innovative culture?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 42:Is senior management involved in strategic skills innovation?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 43:Do middle managers act as strategic skills initiative sponsors?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 44: Do managers and employees in the chemical industry share innovation experience?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 45: Are there innovation cross- functional teams within your organisation?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 46: Are external stakeholders involved in product/service innovation?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 47: Is creativity and risk taking encourage?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 48: Are resources allocated for innovation?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 49: Is there collaboration between the government CHIETA industry and skills development providers?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 50: Are the stakeholder representatives relevant?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 51: Are strategic skills discussions open and frank?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 52: Is implementation strategy integrated with recruitment and remuneration?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 53: Do CHIETA strategic skills implementors have problem-solving skills?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 54: Do CHIETA strategic skills implementers have effective planning and change management skills?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 55: Is middle management involved in strategic skills implementation?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 56: Are there consequences for poor strategic skills implementation choices?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 57: Are resources allocated for strategic skills implementation?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 58: Is strategic skills implementation clearly and adequately communicated?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Question 59: Are strategic skills implantation process simple?

Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

Appendix E: Interview Guide

Strategic planning

1. For how long have you been involved in strategic skills development?

2. Do you think SETAs do justice to strategic skills planning and why?

3. Do SETAs practice skills scenario planning/futuristic skills?

4. What do you consider to be the top challenges to strategic skills development in the industry?

5. Do SETAs treat stakeholders as equal strategic partners and how is this reflected in decision making?

Innovation

6. Are SETA skills development programmes in sync with industry requirements?
7. Is your organisation designed for innovation?

8. Is innovation part of any learning programmes?

Strategic implementation

9. Does CHIETA field staff have strategic implementation skills?
10. Are resources made available for strategic skills implementation?

Appendix F: Statistical Data

Commonalities

	Initial	Extraction
VM8	1.000	0.817
VM9	1.000	0.814
VM10	1.000	0.683
VM11	1.000	0.771
VM12	1.000	0.588
SSP13	1.000	0.663
SSP14	1.000	0.605
SSP15	1.000	0.652
SSP16	1.000	0.722
SSP17	1.000	0.646
SSP18	1.000	0.788
SSP19	1.000	0.778
SSP20	1.000	0.691
SSP21	1.000	0.820
SSP22	1.000	0.680
SSP23	1.000	0.794
SSP24	1.000	0.763
SSP25	1.000	0.653
SSP26	1.000	0.742
SSP27	1.000	0.712

INO28	1.000	0.733
INO29	1.000	0.679
INO30	1.000	0.786
INO31	1.000	0.729
INO32	1.000	0.696
INO33	1.000	0.654
INO34	1.000	0.758
INO35	1.000	0.793
INO36	1.000	0.778
INO37	1.000	0.681
INO38	1.000	0.702
SSP39	1.000	0.591
SSP40	1.000	0.691
SSP41	1.000	0.766
SSP42	1.000	0.691
SSP43	1.000	0.729
SSP44	1.000	0.770
SSP45	1.000	0.736
SSP46	1.000	0.717
SSP47	1.000	0.686
COL48	1.000	0.754
COL49	1.000	0.833

COL50	1.000	0.867
STRI51	1.000	0.706
STRI52	1.000	0.694
STRI53	1.000	0.748
STRI54	1.000	0.697
STRI55	1.000	0.653
STRI56	1.000	0.783
STRI57	1.000	0.745
STRI58	1.000	0.805

Extraction Method: Principal Component Analysis

Total variance explained

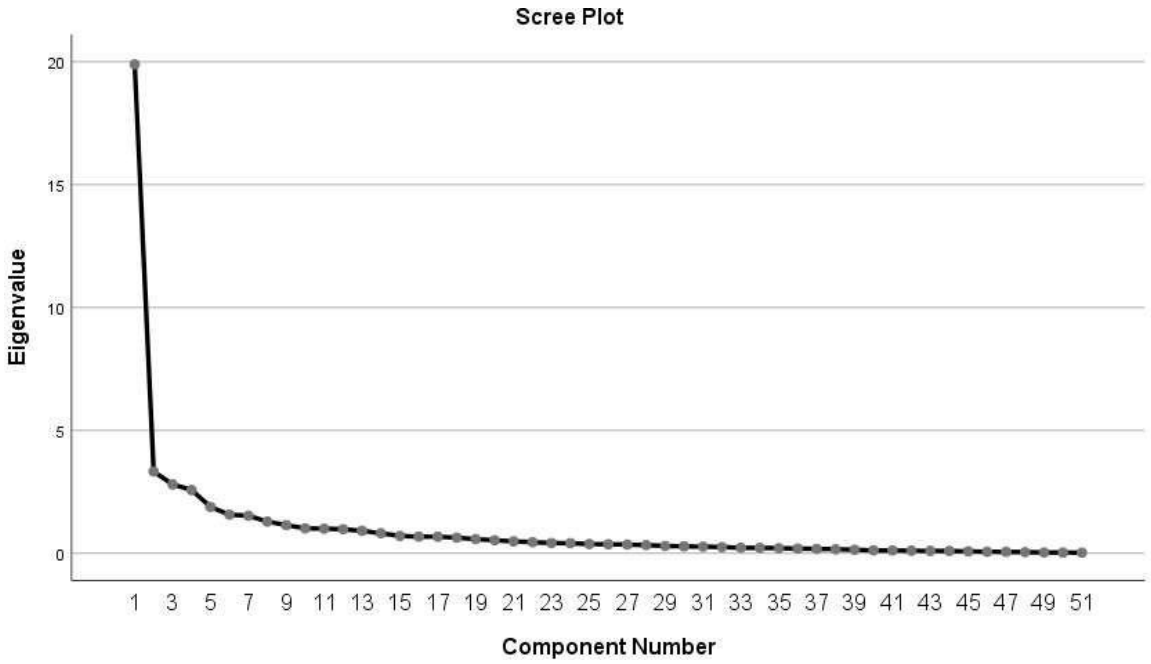
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.894	39.009	39.009	19.894	39.009	39.009	8.321	16.315	16.315
2	3.325	6.520	45.528	3.325	6.520	45.528	7.159	14.037	30.352
3	2.802	5.495	51.023	2.802	5.495	51.023	6.112	11.983	42.335
4	2.575	5.050	56.073	2.575	5.050	56.073	5.420	10.628	52.963
5	1.886	3.698	59.770	1.886	3.698	59.770	3.472	6.807	59.770
6	1.571	3.080	62.850						
7	1.526	2.993	65.843						

8	1.289	2.528	68.371						
9	1.146	2.248	70.618						
10	1.014	1.987	72.606						
11	.999	1.959	74.565						
12	.979	1.919	76.484						
13	.912	1.788	78.272						
14	.815	1.598	79.870						

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
15	.707	1.385	81.256						
16	.677	1.328	82.584						
17	.673	1.320	83.904						
18	.635	1.246	85.150						
19	.576	1.130	86.280						
20	.531	1.041	87.321						
21	.485	.950	88.271						
22	.453	.887	89.158						
23	.417	.817	89.975						

24	.408	.800	90.775						
25	.376	.737	91.512						
26	.365	.716	92.228						
27	.353	.692	92.919						
28	.334	.656	93.575						
29	.299	.587	94.162						
30	.280	.549	94.711						
31	.271	.532	95.243						
32	.250	.490	95.733						
33	.225	.442	96.175						
34	.218	.428	96.603						
35	.207	.406	97.008						
36	.192	.376	97.384						
37	.177	.347	97.731						
38	.164	.321	98.052						
39	.144	.283	98.335						
40	.118	.232	98.567						
41	.115	.225	98.793						
42	.105	.205	98.998						
43	.096	.189	99.186						

44	.093	.183	99.369						
45	.077	.151	99.520						
46	.061	.120	99.639						
47	.056	.111	99.750						
48	.045	.089	99.839						
49	.030	.058	99.897						
50	.028	.055	99.952						
51	.024	.048	100.000						



Scree plot

Table 0.1: Rotated component matrix[a]

STRI56	0.825				
STRI58	0.789				
STRI54	0.777				
STRI53	0.737				
STRI57	0.703				
STRI55	0.668				
STRI52	0.659				
SSP21		0.807			
SSP23		0.777			
SSP19		0.743			
SSP18		0.682			
SSP24		0.667			
INO32			0.816		
INO37			0.794		
INO33			0.742		
INO29			0.699		
VM8				0.865	
VM9				0.853	
VM10				0.799	
COL48					0.666
COL49					0.659

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalisation

Table 0.2: Label rotated component matrix[a]

Construct	Component				
	1	2	3	4	5
STRATEGIC IMPLEMENTATION	0.825				
STRATEGIC IMPLEMENTATION	0.789				
STRATEGIC IMPLEMENTATION	0.777				
STRATEGIC IMPLEMENTATION	0.737				
STRATEGIC IMPLEMENTATION	0.703				
STRATEGIC IMPLEMENTATION	0.668				
STRATEGIC IMPLEMENTATION	0.659				
STRATEGIC SKILLS PLANNING		0.807			
STRATEGIC SKILLS PLANNING		0.777			
STRATEGIC SKILLS PLANNING		0.743			

STRATEGIC SKILLS PLANNING		0.682			
INNOVATION			0.816		
INNOVATION			0.794		
INNOVATION			0.742		
INNOVATION			0.699		
VISION & MISSION				0.865	
VISION & MISSION				0.853	
VISION & MISSION				0.799	
COLLABORATION					0.666
COLLABORATION					0.659

Extraction Method: (CPA) Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalisation

Descriptive statistics

The table below shows the descriptive statistics for strategic implementation (dependent variable) and items under Vision and Mission, Strategic Planning, Innovation, Strategic Skills Training and Collaborations (independent variables).

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Every employee is aware of the organisation's vision statement	106	1	5	3.86	0.980
The organisation's vision statement is clear and understood by all employees	105	1	5	3.76	1.015
The organisation's mandate is clear	105	2	5	4.11	0.847
The stakeholders are aware of the mission statement	105	1	5	3.70	0.952
The organisation's mission statement is reviewed often	106	1	5	3.27	1.192
Consensus is reached amongst all stakeholders about the purpose of skills strategic planning before commencing the strategic planning	105	1	5	3.50	0.942
Strategic skills planners are well informed and knowledgeable about strategic planning and skills development	106	1	5	3.66	0.904
Strategic planning is all-inclusive, inter-professional and cuts across different management levels	106	1	5	3.61	0.879
Strategic planning champions are appointed to advance and monitor key strategic parts	105	1	5	3.47	1.075
Skills planning is informed by skills demand drivers	106	1	5	3.70	1.044
Strategic planning follows a comprehensive	106	1	5	3.35	1.015

environmental scanning exercise					
Strategic dialogues transform collective intelligence into institutional intelligence	106	1	5	3.35	1.069
Strategic solutions are customer-centred and incorporate desired outcomes	105	1	5	3.54	1.000
Strategic planning involves measurement on pre-determined indicators	106	1	5	3.66	0.935
Strategic planning determines resource allocation	105	1	5	3.69	0.964
Strategic planning is linked to other critical management organisational processes	105	1	5	3.56	0.980
Strategic communication is consistent, transparent and is via multiple channels	104	1	5	3.47	1.014
Organisational culture allows for key strategic concerns to emerge and gain formal recognition	106	1	5	3.40	0.973
Strategic planning includes benchmarking and learning from other organisations' good practice	106	1	5	3.42	1.112
There is accountability for poor strategic choices	106	1	5	3.25	1.139
Strategic implementation is incorporated in the strategic planning process	106	1	5	3.47	1.035
The organisation is highly flexible	106	1	5	3.44	1.105
Senior management is involved in innovative initiatives	106	1	5	3.51	1.016
Senior management shapes the organisation's innovative context	106	1	5	3.42	1.086
Financial resources are available for innovation	105	1	5	3.33	1.149

Organisation encourages creativity, autonomy, risk taking and teamwork	106	1	5	3.27	1.183
Organisational design makes for innovation	106	1	5	3.24	1.047
External stakeholders contribute to innovation	105	1	5	3.14	1.087
Different organisational management layers share innovative experiences	106	1	5	3.16	1.061
The organisation regularly develops new products and or services	106	1	5	3.20	1.158
The organisation brings together cross-functional teams for purposes of improving services and business processes	106	1	5	3.36	1.053
Senior executives are appointed as strategic initiative sponsors	106	1	5	3.45	1.052
Emerging and productive sectors of the economy are targeted for skills development	106	1	5	3.47	1.106
Scenario planning is utilised in skills strategic planning	106	1	5	3.52	0.958
Social image of vocational education and training is positive	106	1	5	3.65	1.060
Training improves employment and earning potential	106	1	5	3.81	0.937
Skills programmes incorporate technical and cross-cutting skills such as critical thinking, communication, and team building	105	1	5	3.76	1.033
Multi-partnership mechanisms exist to assure quality training and learning infrastructure	106	1	5	3.55	1.070
There are mechanisms which recognise progressive and different skills acquisition pathways	106	1	5	3.58	0.994

There is a learner tracking mechanism for support, development, and mentorship	106	1	5	3.67	1.030
Curricula are regularly reviewed to match industry demand	106	1	12	3.59	1.358
Strong collaboration exists between government, the SETA, industry, and skills development providers	104	1	5	3.64	1.060
Collaboration process includes relevant stakeholders from the SETA, government, and industry	106	1	5	3.61	0.972
Discussions are frank consider all possible options including unfavourable outcomes	106	1	5	3.52	1.026
Human resource recruitment and remuneration is integrated with the organisation's strategy implementation process	105	1	5	3.59	0.968
People involved in implementation have problem-solving skills	106	1	5	3.49	0.928
Strategy implementation people are adequately qualified in effective planning and change management	106	1	5	3.49	0.908
Organisational resources are allocated for implementation	106	1	5	3.46	0.987
The right performance indicators are developed and measured	106	1	5	3.46	0.978
Strategy implementation people have emotional resilience, self-knowledge, and personal drive to implement	106	1	5	3.55	0.967
Strategy implementation processes are simple to understand	106	1	5	3.37	0.979

Valid N (listwise)	91				

Model summary

Multiple R	R Square	Adjusted R Square	Apparent Prediction Error
.589	.643	.566	.597

Dependent Variable: REGR factor score 2 for analysis 1; Predictors: REGR factor score 1 for analysis 1; REGR factor score 4 for analysis 1; REGR factor score 3 for analysis 1; REGR factor score 5 for analysis 1

	Standardized Coefficients				
	Beta	Bootstrap (1000) Estimate of Std. Error	df	F	Sig.
COLLABORATION	.243	.161	2	1.077	.095*
INNOVATION	.317	.335	1	1.364	.029**
PLANNING	.474	.417	3	0.840	.072*
IMPLEMENTATION	.123	.203	3	.257	.046**

Appendix G: Qualitative Data

Qualitative Data Analysis

Planning

ID	Quotation Name	Quotation Content	Codes
2:54	Seta is conducting research around possible future skills in the chemi…	Seta is conducting research around possible future skills in the chemical sector with the 4th industrial revolution and green skills as change drivers in order to adequately prepare for future skills requirements	4th industrial revolution skills future skills requirements
2:55	addressing scenario planning in the form of artificial intelligence (A…	addressing scenario planning in the form of artificial intelligence (AI) and the 4th industrial revolution through a host of projects and her employer are front runner in "green" renewable technology.	4th industrial revolution skills delivering needed skills future skills requirements relevant skills tailor made skills
2:67	CHIETA simply went through the motions of survival without much attent…	CHIETA simply went through the motions of survival without much attention to creative adaptation to industry requirement	4th industrial revolution skills adaptation to industry requirements offering outdated skills relevant skills strategic development skills creativity strategic skills creativity supply of required skills
2:68	low skills are over-supplied and that companies needed soft skills an…	low skills are over-supplied and that companies needed soft skills and 4th industrial revolution qualifications. Skills being offered are irrelevant	4th industrial revolution skills adaptation to industry requirements delivering needed skills future skills requirements Holistic planning industry skills requirements inventiveness offering outdated skills strategic development skills creativity strategic skills development execution strategic skills development revolution

2:69	the skills process is not driven by industry	the skills process is not driven by industry	4th industrial revolution skills adaptation to industry requirements cooperation among stakeholders delivering needed skills future skills requirements industry skills requirements integration among stakeholders offering outdated skills relevant skills
2:91	innovation was not part of the training programmes at all	innovation was not part of the training programmes at all	4th industrial revolution skills adaptation to industry requirements innovation innovation not encouraged inventiveness lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation mismatch between industry skills needs and the TVETS output
2:92	CHIETA skills programmes were outdated.	CHIETA skills programmes were outdated.	4th industrial revolution skills adaptation to industry requirements delivering needed skills future skills requirements industry skills requirements lack of innovation lack of strategic skills development modernisation offering outdated skills

2:94	CHIETA was not responsive to changes	CHIETA was not responsive to changes	4th industrial revolution skills adaptation to industry requirements delivering needed skills Holistic planning industry skills requirements innovation innovation not encouraged inventiveness lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation mismatch between industry skills needs and the TVETS output mismatch between needed skills and available skills

Innovation

ID	Quotation Name	Quotation Content	Codes
2:17	the programmes are mostly generic	the programmes are mostly generic	not innovative poor quality
2:22	checks and balances to ensure quality information	checks and balances to ensure quality information	innovation quality information
2:24	the need to separate these from innovative skills, which are company-s...	the need to separate these from innovative skills, which are company-specific	delivering needed skills innovativeness relevant skills tailor made skills
2:25	strong management information system for data analysis for purposes of...	strong management information system for data analysis for purposes of creating a credible sector skills plan since the quality of data affects the quality of the SSP.	focused research identifying skills inventiveness quality information relevant skills tailor made skills

2:29	Each institution builds its own database, leading to duplication. He a…	Each institution builds its own database, leading to duplication. He argued that integration would allow for higher quality data for skills analysis.	cooperation among stakeholders delivering needed skills integration among stakeholders partnerships between relevant stakeholders quality information skills development implementation stakeholders partnerships tailor made skills working together
2:32	justice was done to the process. The reason provided wa…	He agreed that justice was done to the process. The reason provided was that the decisions were through consensus.	Holistic planning innovation inventiveness
2:33	this was demonstrated throu…	It was a positive response. She added that this was demonstrated through a CHIETA functioning MIS, which made work much easier.	inventiveness not inventive
2:39	CHIETA could send draft strategic questionnaires and follow this with…	CHIETA could send draft strategic questionnaires and follow this with interviews in all the chambers through the strategic planning framework.	planning quality information Stakeholders working together tailor made skills
2:43	failure to keep pace with the dynamism in the sector and also the abse…	failure to keep pace with the dynamism in the sector and also the absence of high-level skills required by industry.	delivering needed skills focused research Holistic planning identifying skills innovation inventiveness not inventive
2:44	Improving understanding of skills needs, which he thought was partial…	Improving understanding of skills needs, which he thought was partially met and	delivering needed skills Holistic planning identifying skills relevant skills tailor made skills
2:47	Sector skills planning has taken place in	Sector skills planning has taken place in order to support the supply but the quality of delivery has been stunted by	Holistic planning identifying relevant skills strategic skills

	order to support the supply b…	an inadequate learnership system	development execution
2:48	CHIETA had not been the most skilful, competent, innovative, or constr…	CHIETA had not been the most skilful, competent, innovative, or constructively analytical of this information and this had inhibited the CHIETA's strategic skills planning ability.	Holistic planning innovation inventiveness poor planning relevant skills strategic skills development execution
2:50	CHIETA did scenario planning and that futuristic planning required mor…	CHIETA did scenario planning and that futuristic planning required more information from companies which CHIETA did not have.	strategic skills development execution
2:52	long time it took, up to three years to have training programmes accre…	long time it took, up to three years to have training programmes accredited and by that time, the nature of the job would have changed	delivering needed skills inventiveness poor planning relevant skills Stakeholders working together
2:53	Some sectors like manufacturing had lots of futuristic characteristics…	Some sectors like manufacturing had lots of futuristic characteristics whilst other chambers did not practice futuristic planning	Holistic planning identifying skills inventiveness poor quality skills development implementation supply of required skills
2:54	Seta is conducting research around possible future skills in the chemi…	Seta is conducting research around possible future skills in the chemical sector with the 4th industrial revolution and green skills as change drivers in order to adequately prepare for future skills requirements	4th industrial revolution skills future skills requirements
2:55	addressing scenario planning in the form of artificial intelligence (A…	addressing scenario planning in the form of artificial intelligence (AI) and the 4th industrial revolution through a host of projects and her employer are front runner in "green" renewable technology.	4th industrial revolution skills delivering needed skills future skills requirements relevant skills tailor made skills

2:56	CHIETA did not do scenario planning and was like a square peg in a rou…	CHIETA did not do scenario planning and was like a square peg in a round hole. Adding that the CHIETA skills planning is sterile.	delivering needed skills future skills requirements Holistic planning inventiveness not inventive poor planning strategic skills development execution
2:57	there are too many basic short courses	there are too many basic short courses	inventiveness not inventive supply of required skills
2:58	CHIETA put too much focus on skills programmes which do not offer room…	CHIETA put too much focus on skills programmes which do not offer room for development and progression.	strategic development skills creativity strategic skills development modernisation strategic skills development revolution supply of required skills
2:59	A few of the skills were in sync though a majority of them were not. Sh…	few of the skills were in sink though a majority of them were not. She stated that some employers go for unaccredited programmes because those are the skills they want	offering outdated skills strategic development skills creativity strategic skills creativity strategic skills development execution supply of required skills
2:60	CHIETA skills development programmes are stakeholder-driven	CHIETA skills development programmes are stakeholder-driven	cooperation among stakeholders delivering needed skills industry skills requirements integration among stakeholders partnerships between relevant stakeholders tailor made skills

2:62	skills were in sync with the industry as they are researched	skills were in sync with the industry as they are researched	identifying skills industry skills requirements relevant skills strategic skills development modernisation
2:63	some of them are outdated.	some of them are outdated.	offering outdated skills strategic skills development modernisation strategic skills development revolution tailor made skills
2:64	lack of quality of the skills the programmes	lack of quality of the skills the programmes	delivering needed skills future skills requirements industry skills requirements inventiveness offering outdated skills quality information
2:65	CHIETA qualifications are out of sync with industry.	CHIETA qualifications are out of sync with industry.	future skills requirements offering outdated skills strategic skills development modernisation strategic skills development revolution supply of required skills
2:66	companies that are way advanced and the CHIETA are way behind.	companies that are way advanced and the CHIETA are way behind.	offering outdated skills poor quality skills development implementation
2:67	CHIETA simply went through the motions of survival without much attent…	CHIETA simply went through the motions of survival without much attention to creative adaptation to industry requirement	4th industrial revolution skills adaptation to industry requirements offering outdated skills

			relevant skills strategic development skills creativity strategic skills creativity supply of required skills
2:68	low skills are over-supplied and that companies needed soft skills an...	low skills are over-supplied and that companies needed soft skills and 4th industrial revolution qualifications. Skills being offered are irrelevant	4th industrial revolution skills adaptation to industry requirements delivering needed skills future skills requirements Holistic planning industry skills requirements inventiveness offering outdated skills strategic development skills creativity strategic skills development execution strategic skills development revolution
2:69	the skills process is not driven by industry	the skills process is not driven by industry	4th industrial revolution skills adaptation to industry requirements cooperation among stakeholders delivering needed skills future skills requirements industry skills requirements integration among stakeholders offering outdated skills relevant skills

2:73	CHIETA failed to identify the correct skills required by industry	CHIETA failed to identify the correct skills required by industry	adaptation to industry requirements identifying skills industry skills requirements relevant skills skills required by industry supply of required skills tailor made skills
2:76	disjuncture between what institutions produce and what industry needs	disjuncture between what institutions produce and what industry needs	offering outdated skills relevant skills supply of required skills tailor made skills
2:78	structural unemployment through a mismatch of skills and the need of m...	structural unemployment through a mismatch of skills and the need of managing graduate expectation	adaptation to industry requirements industry skills requirements mismatch between needed skills and available skills offering outdated skills relevant skills supply of required skills tailor made skills
2:79	mismatch between industry skills needs and the TVETS output and as a r...	mismatch between industry skills needs and the TVETS output and as a result, industry will not appoint these learners	mismatch between industry skills needs and the TVETS output relevant skills skills required by industry strategic skills development modernisation supply of required skills

2:80	CHIETA had a silo mentality and haphazard in the way they delivered on…	CHIETA had a silo mentality and haphazard in the way they delivered on skills. Mentioned that the CHIETA needed to identify skills requirements for the next 5 to 10 years. There should be demand-driven skills development.	Holistic planning inventiveness strategic development skills creativity strategic skills creativity strategic skills development modernisation strategic skills development revolution
2:81	bureaucracy and poor strategy implementation	bureaucracy and poor strategy implementation	implementation poor strategy implementation skills development implementation strategic skills development modernisation strategic skills development revolution
2:82	organisation did not encourage innovation.	organisation did not encourage innovation.	innovation inventiveness lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation
2:83	employer did not encourage innovation.	employer did not encourage innovation.	innovation inventiveness lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation
2:84	there was no need to be innovative	there was no need to be innovative	innovation not encouraged inventiveness lack of innovation lack of strategic skills development creativity lack of strategic

			skills development modernisation
2:85	CHIETA did not promote innovation and the reason was that the organisa…	CHIETA did not promote innovation and the reason was that the organisation did not have the resources	adaptation to industry requirements innovation innovation not encouraged lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation not inventive
2:86	CHIETA did not encourage innovation.	CHIETA did not encourage innovation.	Holistic planning innovation innovation not encouraged lack of strategic skills development creativity lack of strategic skills development modernisation
2:87	employer organisation did not encourage innovation.	employer organisation did not encourage innovation.	innovation innovation not encouraged lack of strategic skills development creativity lack of strategic skills development modernisation mismatch between industry skills needs and the TVETS output

2:88	innovation was not encouraged.	innovation was not encouraged.	innovation innovation not encouraged inventiveness lack of strategic skills development modernisation mismatch between industry skills needs and the TVETS output
2:89	most chemical industry occupational qualifications are technical hence…	most chemical industry occupational qualifications are technical hence the focus on technical and not innovation	lack of strategic skills development modernisation mismatch between industry skills needs and the TVETS output mismatch between needed skills and available skills relevant skills skills required by industry strategic development skills creativity strategic skills development execution strategic skills development modernisation strategic skills development revolution supply of required skills
2:90	innovation was not part of the learning programmes	innovation was not part of the learning programmes	innovation not encouraged inventiveness lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation mismatch between needed skills and

			available skills not inventive
2:91	innovation was not part of the training programmes at all	innovation was not part of the training programmes at all	4th industrial revolution skills adaptation to industry requirements innovation innovation not encouraged inventiveness lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation mismatch between industry skills needs and the TVETS output
2:92	CHIETA skills programmes were outdated.	CHIETA skills programmes were outdated.	4th industrial revolution skills adaptation to industry requirements delivering needed skills future skills requirements industry skills requirements lack of innovation lack of strategic skills development modernisation offering outdated skills

2:93	innovation was not part of the training programme and it was because t…	innovation was not part of the training programme and it was because the CHIETA concentrates on hard technical skills.	lack of strategic skills development creativity lack of strategic skills development modernisation mismatch between industry skills needs and the TVETS output mismatch between needed skills and available skills not inventive offering outdated skills
2:94	CHIETA was not responsive to changes	CHIETA was not responsive to changes	4th industrial revolution skills adaptation to industry requirements delivering needed skills Holistic planning industry skills requirements innovation innovation not encouraged inventiveness lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation mismatch between industry skills needs and the TVETS output mismatch between needed skills and available skills
2:105	CHIETA was an arrogant structure because they have the funds and do no…	CHIETA was an arrogant structure because they have the funds and do not take time to familiarise themselves with other stakeholders	lack of innovation neglecting stakeholders no organisation not inventive

			poor strategy implementation
2:106	CHIETA did not treat stakeholders as equal strategic partners and that…	CHIETA did not treat stakeholders as equal strategic partners and that this relationship was size-dependent	lack of innovation neglecting stakeholders no organisation not inventive poor strategy implementation
2:107	implementers did not have the skills stating further that they did not…	implementers did not have the skills stating further that they did not do follow-ups	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:108	the majority of the staff have the skills, though a few cases they be…	the majority of the staff have the skills, though a few cases they be lacking	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:109	most projects were not completed because of lack of implementation ski…	most projects were not completed because of lack of implementation skills.	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:110	staff did not have strategic skills	staff did not have strategic skills	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution

2:111	there were cases where projects were not finalised	there were cases where projects were not finalised	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:112	poor implementation skills.	poor implementation skills.	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:113	implementers do not have the skill, the majority possess implementatio…	implementers do not have the skill; the majority possess implementation skills	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:114	CHIETA staff do have strategic implementation skills.	CHIETA staff do have strategic implementation skills.	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:116	dealing with the CHIETA was a frustrating experience	dealing with the CHIETA was a frustrating experience	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:117	staff did not have the strategic implementation skills	staff did not have the strategic implementation skills	implementation implementers do not have the requisite skills poor strategy

			implementation strategic skills development execution
2:132	bureaucracy as a serious challenge.	bureaucracy as a serious challenge.	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation
2:134	lack of strategic support from the CHIETA	lack of strategic support from the CHIETA	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation
2:135	, bureaucratic system within the CHIETA and training payment delays wh…	, bureaucratic system within the CHIETA and training payment delays which in some cases would affect member company cashflows as they would have used their own funding in anticipation of early disbursement.	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation
2:136	CHIETA staff lack implementation skills	CHIETA staff lack implementation skills	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation
2:137	shortage of accredited skills development providers and exorbitant training-rela…	shortage of skills development providers and exorbitant training-related costs,	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation

2:138	mentioned inadequate skills funding, lack of implementation skills, th…	mentioned inadequate skills funding, lack of implementation skills, the absence of synergies within the industry	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation

Collaboration

ID	Quotation Name	Quotation Content	Codes
2:15	non-involvement of industry experts in strategic skills planning	non-involvement of industry experts in strategic skills planning	cooperation among stakeholders stakeholders partnerships Stakeholders working together
2:16	some companies were secretive	some companies were secretive	cooperation among stakeholders stakeholders partnerships Stakeholders working together
2:20	non-representation at the highest level	non-representation at the highest level	cooperation among stakeholders stakeholders partnerships Stakeholders working together
2:21	data obtained from companies and the additional research data obtained…	data obtained from companies and the additional research data obtained by the CHIETA leads to a holistic input in skills planning	collaborations Holistic planning identifying skills working together
2:26	companies do not want to share skills data in critical areas as this w…	companies do not want to share skills data in critical areas as this would destroy their competitive edge	cooperation among stakeholders stakeholders partnerships Stakeholders working together
2:27	He stated that there was concern on lack of data integration between g…	He stated that there was concern on lack of data integration between	cooperation among stakeholders partnerships between relevant

		government departments, e.g., SARS and Stats SA.	stakeholders stakeholders partnerships Stakeholders working together
2:29	Each institution builds its own database, leading to duplication. He a…	Each institution builds its own database, leading to duplication. He argued that integration would allow for higher quality data for skills analysis.	cooperation among stakeholders delivering needed skills integration among stakeholders partnerships between relevant stakeholders quality information skills development implementation stakeholders partnerships tailor made skills working together
2:31	CHIETA did not use industry experts and did not work with other resear…	CHIETA did not use industry experts and did not work with other research centres.	partnerships between relevant stakeholders relevant skills stakeholders partnerships Stakeholders working together
2:35	CHIETA did justice to strategic skills planning and this was through i…	CHIETA did justice to strategic skills planning and this was through interactions with Skills Development Committees which are made up of member companies	cooperation among stakeholders Holistic planning integration among stakeholders
2:36	CHIETA listened to all stakeholders and incorporated their views.	CHIETA listened to all stakeholders and incorporated their views.	cooperation among stakeholders Holistic planning integration among stakeholders partnerships between relevant stakeholders quality information
2:37	different companies are represented in the various chambers and boards…	different companies are represented in the various chambers and boards.	cooperation among stakeholders integration among stakeholders partnerships

			between relevant stakeholders
2:38	all stakeholders needed to be involved	all stakeholders needed to be involved	collaboration cooperation among stakeholders integration among stakeholders partnerships between relevant stakeholders
2:39	CHIETA could send draft strategic questionnaires and follow this with…	CHIETA could send draft strategic questionnaires and follow this with interviews in all the chambers through the strategic planning framework.	planning quality information Stakeholders working together tailor made skills
2:40	CHIETA provided guiding information when employers needed it and also…	CHIETA provided guiding information when employers needed it and also engaged in accredited training intervention	integration among stakeholders partnerships between relevant stakeholders stakeholders partnerships Stakeholders working together
2:42	industry needed to be represented at a higher level.	industry needed to be represented at a higher level.	participatory approach stakeholders partnerships
2:49	CHIETA only operated according to the WSPs. He felt that the CHIETA di…	CHIETA only operated according to the WSPs. He felt that the CHIETA did not want to work out of the legislative boundaries	cooperation among stakeholders partnerships between relevant stakeholders
2:52	long time it took, up to three years to have training programmes accre…	long time it took, up to three years to have training programmes accredited and by that time, the nature of the job would have changed	delivering needed skills inventiveness poor planning relevant skills Stakeholders working together
2:60	CHIETA skills development programmes are stakeholder-driven	CHIETA skills development programmes are stakeholder-driven	cooperation among stakeholders delivering needed skills industry skills requirements integration among stakeholders

			partnerships between relevant stakeholders tailor made skills
2:69	the skills process is not driven by industry	the skills process is not driven by industry	4th industrial revolution skills adaptation to industry requirements cooperation among stakeholders delivering needed skills future skills requirements industry skills requirements integration among stakeholders offering outdated skills relevant skills
2:72	non participation of industry in skills development at TVETs	non participation of industry in skills development at TVETs	cooperation among stakeholders partnerships between relevant stakeholders
2:95	CHIETA did not treat stakeholders as equal strategic partners but inst…	CHIETA did not treat stakeholders as equal strategic partners but instead CHIETA values employers more than trade unions. The CHIETA prioritises the needs of industry over those of employees	cooperation among stakeholders integration among stakeholders neglecting stakeholders partnerships between relevant stakeholders
2:96	CHIETA does treat stakeholders as equal strategic partners but compani…	CHIETA does treat stakeholders as equal strategic partners but companies do not participate fully.	cooperation among stakeholders integration among stakeholders neglecting stakeholders partnerships between relevant stakeholders

2:97	CHIETA treated all stakeholders as strategic partners as the partnersh…	CHIETA treated all stakeholders as strategic partners as the partnership model does not allow for any other way of operation. He argued that the CHIETA only facilitates direct stakeholders in the skills arena and in the process ignore industry experts	collaboration collaborations cooperation among stakeholders participatory approach partnerships between relevant stakeholders working together
2:98	stakeholders directly involved with the industry were treated much bet…	stakeholders directly involved with the industry were treated much better than those that are not considered core	collaboration collaborations cooperation among stakeholders
2:99	all stakeholders are treated as equal strategic partners	all stakeholders are treated as equal strategic partners	collaboration collaborations cooperation among stakeholders participatory approach partnerships between relevant stakeholders working together
2:100	CHIETA tries to involve all stakeholders as much as is possible to ens…	CHIETA tries to involve all stakeholders as much as is possible to ensure buy-in and clarity in all their project	collaboration collaborations cooperation among stakeholders participatory approach partnerships between relevant stakeholders working together
2:101	all stakeholders were represented constitutionally and therefore consu…	all stakeholders were represented constitutionally and therefore consulted fully.	collaboration collaborations cooperation among stakeholders Holistic planning participatory approach partnerships between relevant stakeholders working together

2:102	relationship was a two-way street with the CHIETA supporting all stake…	relationship was a two-way street with the CHIETA supporting all stakeholders	collaboration collaborations cooperation among stakeholders integration among stakeholders participatory approach partnerships between relevant stakeholders stakeholders partnerships Stakeholders working together
2:103	CHIETA was a stakeholder-driven organisation	CHIETA was a stakeholder-driven organisation	collaboration collaborations cooperation among stakeholders integration among stakeholders participatory approach partnerships between relevant stakeholders stakeholders partnerships Stakeholders working together
2:104	there was a greater sense of partnership between SETA and its strategi…	there was a greater sense of partnership between SETA and its strategic partners.	collaboration collaborations cooperation among stakeholders integration among stakeholders participatory approach partnerships between relevant stakeholders stakeholders partnerships Stakeholders working together
2:105	CHIETA was an arrogant structure because they have the funds and do no…	CHIETA was an arrogant structure because they have the funds and do not take time to familiarise themselves with other stakeholders	lack of innovation neglecting stakeholders no organisation not inventive

			poor strategy implementation
2:106	CHIETA did not treat stakeholders as equal strategic partners and that…	CHIETA did not treat stakeholders as equal strategic partners and that this relationship was size-dependent	lack of innovation neglecting stakeholders no organisation not inventive poor strategy implementation

Implementation

ID	Quotation Name	Quotation Content	Codes
2:23	focus on micro-skills	focus on micro-skills could be detrimental where one is talking about skills at a sectoral level.	skills development implementation
2:29	duplication in implementation	Each institution builds its own database, leading to duplication. He argued that integration would allow for higher quality data for skills analysis.	cooperation among stakeholders delivering needed skills integration among stakeholders partnerships between relevant stakeholders quality information skills development implementation stakeholders partnerships tailor made skills working together
2:45	supply of required skills	Supporting the supply of required skills through education and training. Improving an understanding of skills needs	skills development implementation supply of required skills
2:47	sector skills planning	sector skills planning has taken place in order to support the supply but the quality of delivery has been stunted by an inadequate learnership system	Holistic planning identifying skills relevant skills strategic skills development execution
2:48	CHIETA had not been the most skilful, competent, innovative, or constr…	CHIETA had not been the most skilful, competent, innovative, or constructively analytical of this information and this had inhibited the CHIETA's strategic skills planning ability.	Holistic planning innovation inventiveness poor planning relevant skills strategic skills development execution
2:50	CHIETA did scenario planning and that futuristic planning required mor…	CHIETA did scenario planning and that futuristic planning required more information from companies which CHIETA did not have.	strategic skills development execution

2:53	Some sectors like manufacturing had lots of futuristic characteristics…	Some sectors like manufacturing had lots of futuristic characteristics whilst other chambers did not practice futuristic planning	Holistic planning identifying skills inventiveness poor quality skills development implementation supply of required skills
2:56	CHIETA did not do scenario planning and was like a square peg in a rou…	CHIETA did not do scenario planning and was like a square peg in a round hole. Adding that the CHIETA skills planning is sterile.	delivering needed skills future skills requirements Holistic planning inventiveness not inventive poor planning strategic skills development execution
2:59	few of the skills were in sink though a majority of them were not. Sh…	few of the skills were in sink though a majority of them were not. She stated that some employers go for unaccredited programmes because those are the skills, they want	offering outdated skills strategic development skills creativity strategic skills creativity strategic skills development execution supply of required skills
2:66	companies that are way advanced and the CHIETA are way behind.	companies that are way advanced and the CHIETA are way behind.	offering outdated skills poor quality skills development implementation
2:68	low skills are over-supplied and that companies needed soft skills an…	low skills are over-supplied and that companies needed soft skills and 4th industrial revolution qualifications. Skills being offered are irrelevant	4th industrial revolution skills adaptation to industry requirements delivering needed skills future skills requirements Holistic planning industry skills requirements inventiveness offering outdated

			skills strategic development skills creativity strategic skills development execution strategic skills development revolution
2:77	Planning and implementing	Planning and implementing	Holistic planning planning skills development implementation
2:81	bureaucracy and poor strategy implementation	bureaucracy and poor strategy implementation	implementation poor strategy implementation skills development implementation strategic skills development modernisation strategic skills development revolution
2:89	most chemical industry occupational qualifications are technical hence…	most chemical industry occupational qualifications are technical hence the focus on technical and not innovation	lack of strategic skills development modernisation mismatch between industry skills needs and the TVETS output mismatch between needed skills and available skills relevant skills skills required by industry strategic development skills creativity strategic skills development execution strategic skills development modernisation strategic skills development

			revolution supply of required skills
2:105	CHIETA was an arrogant structure because they have the funds and do no…	CHIETA was an arrogant structure because they have the funds and do not take time to familiarise themselves with other stakeholders	lack of innovation neglecting stakeholders no organisation not inventive poor strategy implementation
2:106	CHIETA did not treat stakeholders as equal strategic partners and that…	CHIETA did not treat stakeholders as equal strategic partners and that this relationship was size-dependent	lack of innovation neglecting stakeholders no organisation not inventive poor strategy implementation
2:107	implementers did not have the skills stating further that they did not…	implementers did not have the skills stating further that they did not do follow-ups	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:108	the majority of the staff have the skills, though a few cases they be…	the majority of the staff have the skills, though a few cases they be lacking	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution

2:109	most projects were not completed because of lack of implementation ski…	most projects were not completed because of lack of implementation skills.	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:110	staff did not have strategic skills	staff did not have strategic skills	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:111	there were cases where projects were not finalised	there were cases where projects were not finalised	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:112	poor implementation skills.	poor implementation skills.	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:113	implementers do not have the skill, the majority possess implementatio…	implementers do not have the skill; the majority possess implementation skills	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:114	CHIETA staff do have strategic implementation skills.	CHIETA staff do have strategic implementation skills.	implementation implementers do not have the requisite skills poor strategy

			implementation strategic skills development execution
2:116	dealing with the CHIETA was a frustrating experience	dealing with the CHIETA was a frustrating experience	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:117	staff did not have the strategic implementation skills	staff did not have the strategic implementation skills	implementation implementers do not have the requisite skills poor strategy implementation strategic skills development execution
2:118	most CHIETA staff had strategic implementation skills.	most CHIETA staff had strategic implementation skills.	implementation skills strategic execution skills strategic implementation skills
2:119	CHIETA project staff possess strategic implementation skills	CHIETA project staff possess strategic implementation skills	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills
2:120	CHIETA projects staff have strategic implementation skill	CHIETA projects staff have strategic implementation skill	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic

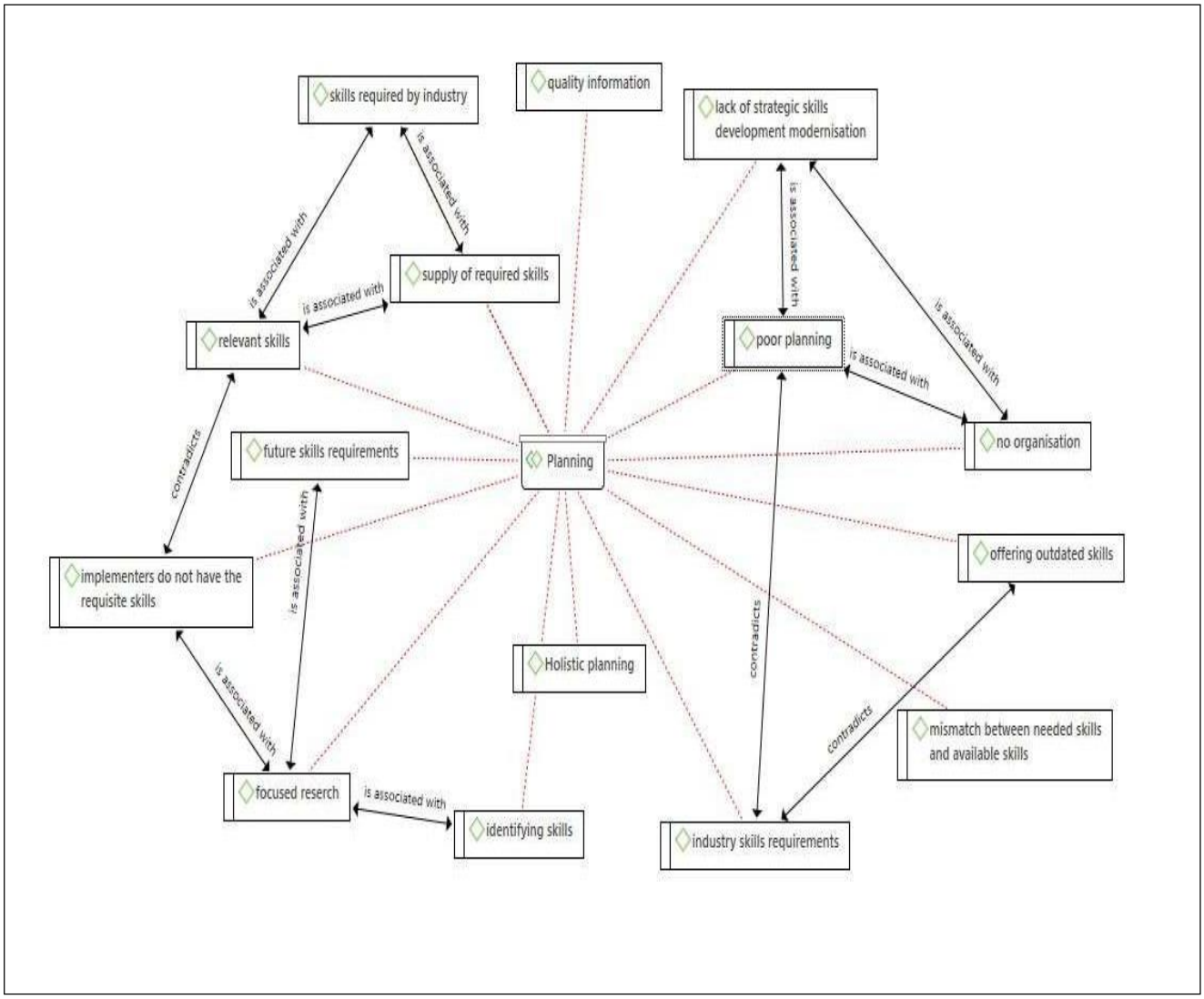
			implementation skills
2:121	CHIETA projects staff had strategic implementation skills	CHIETA projects staff had strategic implementation skills	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills
2:122	skills existed within the CHIETA.	skills existed within the CHIETA.	implementation skills strategic execution skills strategic implementation skills
2:123	implementers has the strategic skills	implementers has the strategic skills	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills
2:124	resources are made available for strategic skills implementation.	resources are made available for strategic skills implementation.	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills

2:125	resources were made available for strategic implementation though they…	resources were made available for strategic implementation though they might not be enough	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills
2:126	resources were made available	resources were made available	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills
2:127	resources were provided	resources were provided	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills
2:128	resources were made available	resources were made available	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills
2:129	resources are made available	resources are made available	Holistic planning implementation implementation skills skills development implementation

			strategic execution skills strategic implementation skills
2:130	resources were made available	resources were made available	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills
2:131	resources were made available for implementation.	resources were made available for implementation.	Holistic planning implementation implementation skills skills development implementation strategic execution skills strategic implementation skills
2:132	bureaucracy as a serious challenge.	bureaucracy as a serious challenge.	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation
2:134	lack of strategic support from the CHIETA	lack of strategic support from the CHIETA	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation

2:135	, bureaucratic system within the CHIETA and training payment delays wh…	, bureaucratic system within the CHIETA and training payment delays which in some cases would affect member company cashflows as they would have used their own funding in anticipation of early disbursement.	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation
2:136	CHIETA staff lack implementation skills	CHIETA staff lack implementation skills	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation
2:137	shortage of accredited skills development providers and exorbitant training-rela…	shortage of accredited skills development providers and exorbitant training-related costs,	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation
2:138	mentioned inadequate skills funding, lack of implementation skills, th…	mentioned inadequate skills funding, lack of implementation skills, the absence of synergies within the industry	lack of innovation lack of strategic skills development creativity lack of strategic skills development modernisation poor strategy implementation

Networks


skills required by industry
quality information
lack of strategic skills development modernisation
is associated with
is associated with
is associated with
supply of required skills
is associated with
relevant skills
poor planning
is associated with
is associated with
contradicts
future skills requirements
Planning
no organisation
offering outdated skills
implementers do not have the requisite skills
is associated with
Holistic planning
contradicts
contradicts
mismatch between needed skills and available skills
is associated with
focused reserch
is associated with
identifying skills
industry skills requirements

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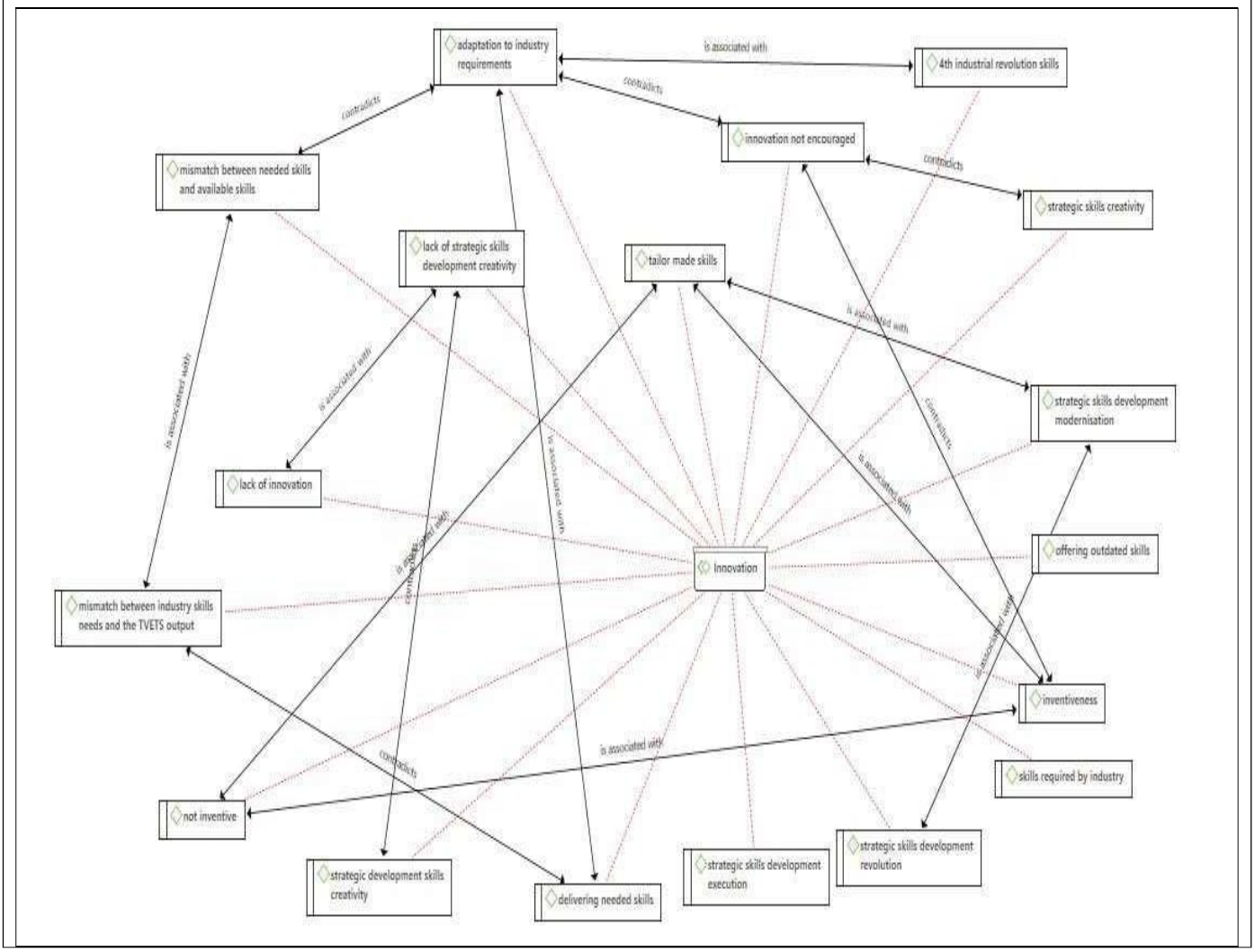
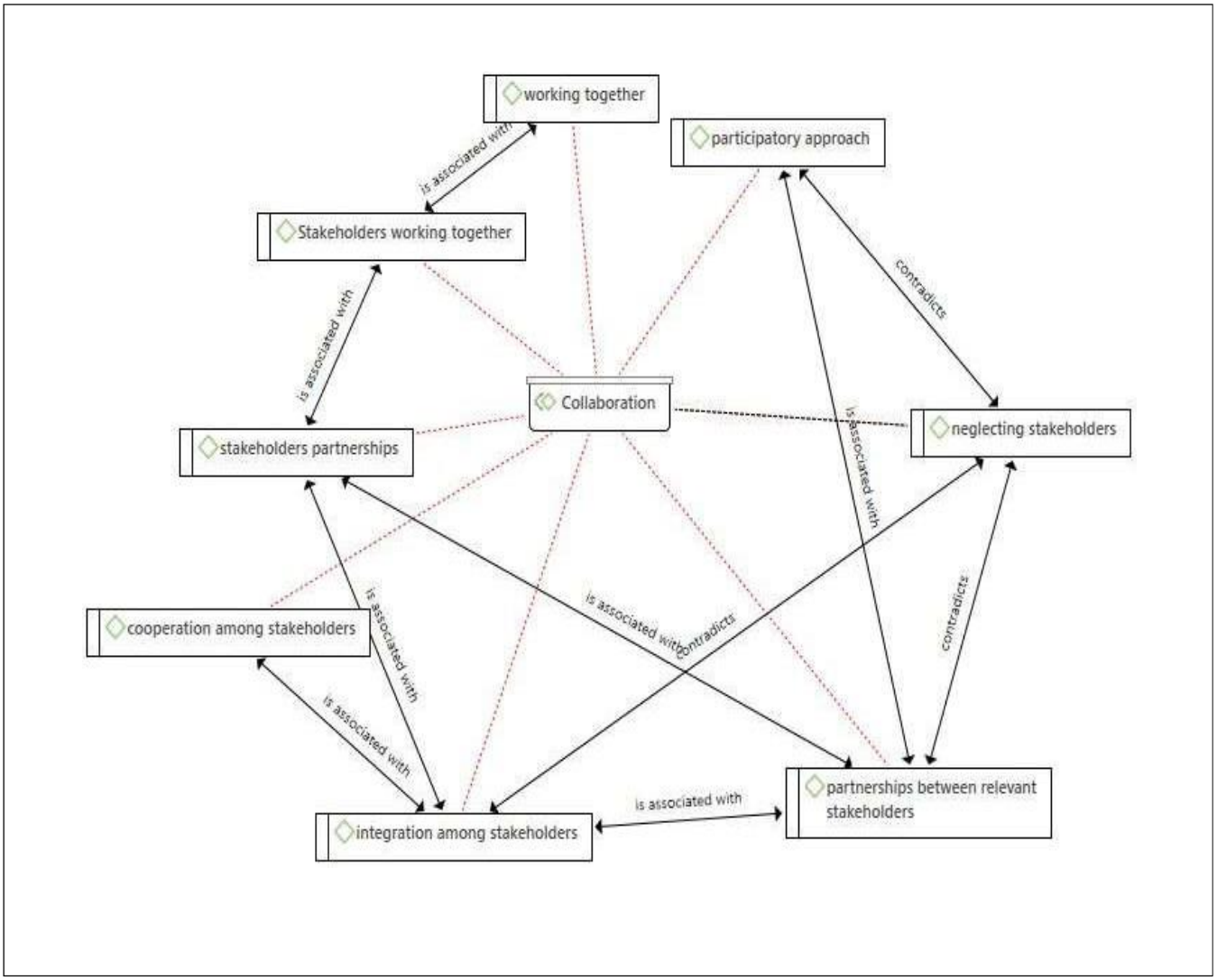
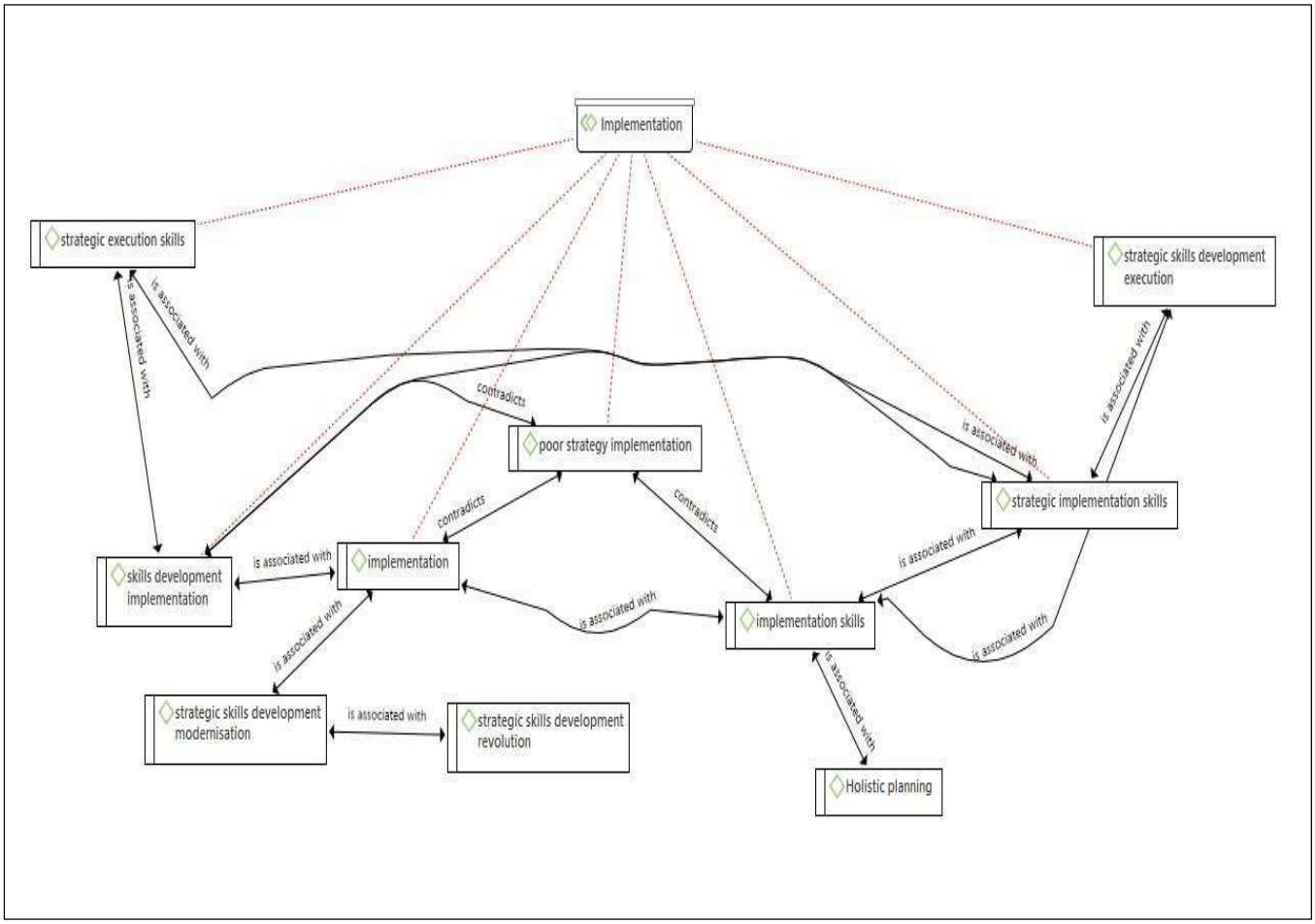

adaptation to industry requirements
is associated with
4th industrial revolution skills
contradicts
contradicts
innovation not encouraged
contradicts
strategic skills creativity
mismatch between needed skills and available skills
lack of strategic skills development creativity
tailor made skills
is associated with
strategic skills development modernisation
is associated with
is associated with
lack of innovation
is associated with
is associated with
is associated with
Innovation
offering outdated skills
mismatch between industry skills needs and the TVETS output
is associated with
inventiveness
is associated with
contradicts
skills required by industry
not inventive
strategic development skills creativity
delivering needed skills
strategic skills development execution
strategic skills development revolution


working together
participatory approach
is associated with
Stakeholders working together
contradicts
is associated with
Collaboration
neglecting stakeholders
stakeholders partnerships
is associated with
is associated with
contradicts
cooperation among stakeholders
is associated with
is associated with
contradicts
is associated with
partnerships between relevant stakeholders
integration among stakeholders


Implementation
strategic execution skills
strategic skills development execution
is associated with
is associated with
is associated with
is associated with
contradicts
poor strategy implementation
contradicts
contradicts
strategic implementation skills
skills development implementation
is associated with
implementation
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implementation skills
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strategic skills development modernisation
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strategic skills development revolution
is associated with
Holistic planning