



**EXPLORING CAPACITY DEVELOPMENT PROGRAMMES FOR SOCIO-
ECONOMIC TRANSFORMATION IN SOUTH AFRICA: A CASE STUDY OF THE
SOUTH AFRICAN PETROLEUM INDUSTRY**

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ABSTRACT

Capacity development programmes in the workplace, whether in the public or private sectors, play a strategic role through increasing the ability of people, organisations, and societies to cope with or adapt to challenging and adverse circumstances that affect the organisations or systems that societies depend upon. Capacity development programmes are an approach that addresses, in a continuous manner, specific issues at institutional/organisational, socio-economic, environmental, and infrastructural levels, with the aim of improving the delivery of adequate services; boosting organisational competitive advantages; improving productivity; and meeting sustainable development goals. In the workplace, capacity development is a significant socio-economic resource and a foremost key factor that can guarantee the development of employees' skills, abilities, talents, performance, and value, as well as enabling organisational perspectives for improved innovation, efficiency, and sustainable growth.

This study examined capacity development programmes as a tactical approach, suitable for tackling and bridging the gaps of technical skills shortages, skills waste and the deficit of positive human capital capacity affecting the South African society and petroleum industry respectively. The vision and mission statements of capacity development programmes are to continually equip, build and develop positive, creative, and innovative human capital capacity with functional, technical, and behavioural capacities to convey organisational and societal change through supporting people knowledge, skills, talents, capacities or abilities improvement and development in various spheres of socio-economic activities.

The focus of this study was to describe the role that capacity development programmes could play in the petroleum industry for socio-economic transformation in South Africa, through the case study of the South African petroleum industry. It also examined the critical factors affecting the best practice of policies, programmes and strategic plans that support structures of human capital capacity development in the workplace and the challenges obstructing the effective best practice of capacity development programmes on job-related skills development of employees in the South

African petroleum industry. Therefore, the triangulation methods assisted the researcher with using more than one approach as sources of data collection and analysis process and by approaching data with various theories or perspectives in mind to extend the possibilities of bridging the gaps of technical skills shortage, skills waste and the deficit of positive human capital capacity affecting the South African petroleum industry. This method was useful in producing knowledge from diverse viewpoints upon matters that were discussed in this study. The triangulation methods facilitated the researcher in terms of gathering and converging quantitative and qualitative data from petroleum companies that are members of the South African Petroleum Industry Association (SAPIA).

Therefore, the quantitative survey combined with qualitative in-depth interviews provided a better understanding of the information obtained. In this study, the PESTIE framework was applied in line with the aim and objectives defined for this research. However, only the political, economic, and social variables were examined to identify the challenges and effects of capacity development programmes in the process of developing technical skills, controlling/minimising skills waste and developing positive human capital capacity in the South African petroleum industry. Accordingly, findings indicated that (87.6%) challenges affecting the petroleum industry development and socio-economic transformation in South Africa are mostly caused by the lack of policies, programmes, and strategic plans best practice to bridging the gaps of technical skills shortages, skills waste, and the deficit of positive human capital capacity in the workplace.

In addition, respondents (77.6%) affirmed that policies improvement and best practice could be a vital key in promoting scarce skills development in the South African petroleum industry. Furthermore, respondents (78.6%) agreed that awareness campaigns about capacity development programmes best practice in the South African petroleum industry could fuel the engine of technical, functional, and behavioural capacities development, and put in place a locomotive of organisational improved competitive advantages (innovation, productivity, and performance improvement) and socio-economic transformation. Moreover, respondents (73.7%) agreed that an improved/developed model of capacity development programmes in the workplace could be a sine qua non condition for scarce skills (technical skills)

development and retention in the South African petroleum industry. Therefore, the CDP-PUSH-Effects model that comprises the Big Push and Push-Pull strategies associated with reactive, proactive, and active approaches was suggested as an indispensable tool, useful in tackling the critical matters of technical skills shortages, skills waste and the deficit of positive human capital capacity affecting the South African petroleum industry and society. Accordingly, more awareness, resources and efforts from role-key players (policy-makers, decision-makers and stakeholders) would be required towards supporting the scarce skills development process and strengthening employees' ability to deliver quality services as well as deal with unpredicted adverse events that could prevent the petroleum industry's development and socio-economic transformation processes in the country.

DECLARATION

I.....Eustache Tanzala Kikasu..... hereby declare that this thesis, titled, *“Exploring capacity development programmes for socio-economic transformation in South Africa: a case study of the South African petroleum industry”*, is my original work and has not previously been submitted either in part, or in its entirety, for a degree at any other university. This thesis is submitted in fulfilment of the requirements for the Degree of Doctor in Public Administration: Department of Public Management and Economics, in the Faculty of Management Sciences. I further declare that this work does not infringe or violate the rights of others as all the sources cited or quoted by me are indicated and acknowledged by means of a comprehensive list of references.

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DEDICATION

I dedicate the harvested efforts of this hard work to my God, the Lord Jesus-Christ from whom all inspirations and talents come. I also dedicate this work to all members of Winners Chapel International Durban Church, to the current and future generation or descendants of Eustache Tanzala Kikasu, my late father and Evelyne Koy-Koy Mumbuanda my mother, and to Mbelo's family at large, I cordially affirm my enthusiasm and gratitude for your spiritual, financial, and material supports.

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There is no price man on earth can pay to reward your hard work. May heaven reward you abundantly for your passionate assistance and support in successfully guiding many of your students, including myself. The success of this study comes also from a wide-ranging contribution. I acknowledge the contribution and support of colleagues and many respondents for their efforts and commitment, which led to the completion of this study. Their efforts are recognised in dispersed order. I reiterate my cordial acknowledgement to Mercillene P Mathews for her affectionate love and commitment shown through the quality editing of this thesis. I also reiterate my acknowledgement to all-valuable respondents from SAPIA, CHIETA, ENGEN Refinery and Government Department of Energy (Petroleum industry sub-sector), for their suggestions and multiple supports, time, and interest in this study. I also reiterate my jovial acknowledgement to the Durban University of Technology: Research, Postgraduate Development and Support Departments for funding throughout the completion of this project.

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Sincerely, Eustache Tanzala Kikasu

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LIST OF ACRONYMS

ACD:	Adaptive Capacity Development
ADB:	Asian Development Bank
AFREN:	Afren is an independent oil and gas exploration and production company
ANC:	African National Congress
AU:	African Union
B-BBEE:	Broad-based black economic empowerment
CDP-PUSH-Effects:	Capacity Development Programmes that Promote Useful Skills Helpfully.
CHIETA:	Chemical Industries Sector Education and Training Authority
CNPA:	Cambodian National Petroleum Authority
CRES:	Centre de Recherches Entreprises et Sociétés (French)
CS:	Capacity Sustainability
DFCU	Bank: Development Finance Company of Uganda Bank Limited
DOL:	Department of Labour
EACEA:	Education, Audio-visual and Culture Executive Agency
EIA:	Environmental Impact Assessment
ELC:	Environmental Learning Capacity
EU:	European Union
FC:	Functional Capacities
FMCD:	Financial Management Capacity Development
FSD:	Fundraising Skills Development
GCD:	Governance Capacity Development
GDP:	Gross Domestic Product
HCD:	Human Capacity Development
HRCD:	Human Resources Capacity Development
HRD-SA:	Human Resource Development Strategy for South Africa
IFC:	International Finance Corporation

ILCD:	Internal Leadership Capacity Development
IPIECA:	International Petroleum Industry Environmental Convention Association
JICA:	Japan International Cooperation Agency
LCD:	Leadership Capacity Development
MCD:	Management Capacity Development
MSD:	Marketing skills development
NPEA:	National Petroleum\ Employers Association
NQF:	National Qualifications Framework
NQFA:	National Qualifications Framework Act
NSDS:	National Skills Development Strategy
OBP:	Operations Business Plan
ODA:	Overseas Development Assistance
OECD:	Organisation for Economic Co-operation and Development
OLC:	Organisational Learning Capacity
OPEC:	Organisation of the Petroleum Exporting Countries
PDE:	Programme Design and Evaluation
PESTIE:	Political, Economic, Social, Technological, International, and Ecological
PLC:	Programmatic Learning Capacity
PTDF:	Petroleum Technological Development Fund
PTI:	Petroleum Training Institutions
PWC:	Price Waterhouse Coopers
ROE:	Return on Equity
ROI:	Return on Investment
SAPIA:	South African Petroleum Industry Association
SDA:	Skills Development Act
SDLA:	Skills Department Levies

CHAPTER 1

OVERVIEW OF THE STUDY

1.1 Introduction

The petroleum industry is driving economies worldwide through its value chain operations that include plant (refinery) activities, crude oil production, supplying or distributing activities, storing activities, wholesaling, and retailing activities (Viljoen, 2017). These operations have a strong influence on other commodities and socio-economic (rural and urban) development due to the investments involved. In this era of the fourth industrial revolution, several socio-economic activities are directly or indirectly related to factors like human capital capacity, automation, machine, computer, and mechanical devices, which have become exponentially necessary for organisational/institutional development. All these factors are significantly essential in influencing changes to several socio-economic activities.

Moreover, human capital capacity development is one of the key driving forces that support competitive socio-economic activities. In other words, organisational innovation, productivity, and performance are correspondingly or directly and indirectly reliant on human capital capacity development. Therefore, artificial intelligence and rapid technological development embarks individuals and organisations on the path of unstoppable/continual competition. Consequently, continual learning in the workplace or in any other environment has become unavoidable for individuals and organisations to improve or increase competitive capacities to escape the risk of finding themselves left behind. In addition, learning for developing capacities or skills in the workplace is amongst the key strategies, attributes, or components of programmes of ability/skills development in the workplace.

Thus, capacity development programmes are an imperative approach for human capital capacity development (functional, technical, and behavioural capacities development), for organisational/institutional competitive advantages (success), given that many business forecasters are predicting that workforce capacities/skills/abilities/talents development is, and will be an overbearing requirement for employment and organisational sustainable development. The fourth industrial revolution (technological innovation) will imperatively force individuals and

organisations to change the business culture or the way in which things should be done, whether at home or at the workplace. This implies that even qualified people with degrees in the workplace will still need to improve their skills/knowledge to remain relevant and competitive in their fields of occupation, as well as to escape the risk of becoming irrelevant and unproductive. Therefore, capacity development programmes are a significant tool/factor to building or developing human capital capacity and promoting/supporting organisational competitive advantage. According to the UNDP (2009: 5), organisations (including the petroleum industry) in any field of socio-economic activities are expected to bring about transformation that could generate and sustain socio-economic transformation.

Consequently, organisational development and socio-economic transformation without human capital capacity development is impossible. Generally, this study explored dimensions of positive human capital capacity development, specifically, the crisis of technical skills shortages, skills waste and the deficit of positive human capital capacity affecting respectively the South African petroleum industry and South African society. The focus on these issues was essential because investing in human capital capacity development is one of the key options/strategies for organisational development and socio-economic transformation (Williams, 2016: 205). Therefore, capacity development programmes provide and promote training programmes and packages that support people's skills development in the workplace, empowering them with abilities to recurrently support productivity, creativity, innovation, and competitiveness as a response to organisational requirements for performance and increased productivity, as well as for sustainable socio-economic transformation in the country.

Therefore, Yamoah (2014) specified that there is a close link between human capital capacity development that deals with skills training programmes and the empowerment of individual employees in the workplace, which should result in job performance. Consequently, the socio-economic transformation process in the country associated with permanent skills training programmes and the empowerment of employees in the workplace might imperatively "PUSH" the petroleum industry to develop more competitive and cost-effective economic activities; become technologically sustainable; and create a great opportunity for growing the demand of petroleum (energy) products. Accordingly, increased productivity, creativity and

innovation in the petroleum industry, or any other organisation, will subsequently create increased demand for the available technically skilled people who are ready to work and the demand for capacity development programmes to train new or existing employees in the fields of required scarce skills. According to Yamoah (2014:139) and IPIECA (2011:10-11), skills/competencies/talents/capacities development are obtained through experience and additional processes of quality skills training with new/innovative programmes that equip or empower employees with knowledge, which subsequently contributes to improving their job performance and achieving the organisational vision, mission, goals, and objectives.

Therefore, the South African society and petroleum industry, which are affected by the deficit of positive human capital capacity as well as technical skills shortages and skills waste, will more than ever require capacity development programmes in the workplace. Furthermore, capacity development programmes might be required to boost positive human capital capacity development, which is a sine qua non condition for petroleum industry development, economic growth, and social change in the country. For example, issues related to the triple scourge of unemployment, poverty, and inequality; as well as corruption, crimes, gender-based violence, child, and sexual abuse, etc., are issues that require the development of positive human capital capacity and the improvement or best practice of policies, programmes, and strategic plans.

Thus, capacity development programmes are a key tool that must play a strategic role towards minimising and closing various socio-economic gaps. For example, since 1994, the period after the apartheid era until today, the vision for socio-economic transformation in South Africa aimed to tackling and reducing unemployment, poverty, and inequality rate (Manuel, 2011: 365). Therefore, this vision cannot be completely fulfilled if programmes that promote the development of positive human capital capacity, as well as technical, functional, and behavioural capacities development in the workplace are not sponsored and promoted. Therefore, one of the key approaches in overcoming socio-economic challenges includes not only the improvement and best practice of policies, programmes, and strategic plans, but also the best usage of capacity development programmes, as well as technical, functional, and behavioural skills development framework in the public and private sectors. In the petroleum industry, capacity development programmes as a key tool/instrument, can promote the petroleum industry's value chain activities development, related industries

expansion, and support direct, indirect, and induced job creation opportunities (Viljoen, 2016). For example, the pressure from energy demands (petroleum products) due to an expected increase in socio-economic activities (especially in the transport sector) can drive the petroleum industry to increase productivity whilst simultaneously upgrading the quantity and quality of petroleum products to be supplied in the local or regional marketplace. In addition, capacity development programmes practiced in the petroleum industry could increase awareness of the best practice of policies, programmes and strategic plans and offer competitive advantages to oil companies and related industries.

For example, a “PUSH” strategy for human capital capacity development in the petroleum industry could have multiple effects on socio-economic activities in sectors like agriculture, transport, and the food industry, etc., which are considered important sources of income earnings for economic growth (Manuel, 2011: 49 and Zarenda, 2013: 3). Thus, the United Nations Development Programmes (UNDP) indicated three types of interventions that capacity development programmes could have in human capital capacity development in the workplace. Key interventions include functional, technical, and behavioural capacity development (IFC, 2014: 52). This study examined capacity development interventions in area of scarce skills or technical skills shortages affecting the South African petroleum industry’s development and socio-economic transformation process in the country.

However, discussions were essentially focussed on how to minimise or close the gap of technical skills shortages and skills waste, as well as the gap of the deficit of positive human capital capacity affecting the South African petroleum industry and society. Therefore, in effort to promote capacity development interventions in areas of required scarce skills in the petroleum industry, a model of capacity development programmes was developed as an approach to closing the gap of technical skills shortages, to trim skills waste and generally, to support the process of positive human capital capacity development in the country. According to King (2010: 42), the research on capacity development programmes is very significant in boosting the politics of skills for employment, skills for competitiveness and skills for inequality and poverty reduction. Accordingly, the study identified existing challenges related to the structures and framework that support programmes of skills development in the petroleum industry and proposed the necessary steps aligned to the best practice of the CDP-PUSH-

Effects model, which was developed by the researcher to tackle technical skills shortages in the South African petroleum industry.

1.2 Background to the study

Research indicated that in the South African petroleum industry, there is a critical need for technical skills development and a robust learning infrastructure improvement with appropriate learning interventions to ensure the sustainability of skills into the future (SAPIA, 2012: 5). In addition, research was conducted across the South African petroleum companies to quantify and understand the extent of scarce and critical skills issues and the requisite learning interventions to breach these industry-identified skills shortages/challenges. The findings of the research indicated that employers in the petroleum industry have revealed a desire for a more technically skilled workforce. This suggests that there are gaps or a lack of available technically skilled employees ready to occupy specific functions or positions provided by employers in the quest of a desired technical skilled workforce in the petroleum industry.

However, in light of the aforementioned, it can be assumed that there was also a lack of a workable framework; a lack of an appropriate skills development model; and a lack of efforts and willingness to implement the approved existing framework of skills development in the petroleum industry. Additionally, the lack of policies best-practice in supporting capacity development programmes could also be indicated as a significant barrier to capacity development interventions, human capital capacity development and petroleum industry performance. Moreover, it is indispensable emphasise that there could be a lack of appropriate mechanism to identify skills priorities needs and needs for scarce skills development in the petroleum industry. Therefore, this study envisaged to explore, identify, and examine issues affecting “human capital capacity” (technical skills) development in the South African petroleum industry.

Nevertheless, firstly, the concept that needed more clarification and understanding in this study is the term “capacity”. In the context of organisational development, Kruger (2019: 229) stated that the description of the concept ‘capacity’ must reflect the capability/ability of an organisation to provide operations or processes that satisfy a community’s demand for goods and services. This means that organisational operations or processes must own/possess an industrial/development aptitude or

capability to produce sufficient and required quality products or services that contribute to socio-economic growth or communities' lifestyle improvement. Therefore, human capital capacity, as any particular product within an organisation, must be considered as one of the scarce resources which can ensure competitive advantages for organisational development and which need to be managed and developed with unlimited care (Hossain and Roy, 2016: 1020). Organisational competitive advantages can be achievable through strategic investments in employees' capacity development and retention, best-practice of talent/knowledge management and skills training structures/programme development in the workplace. Possibly, the effective employment of human capital capacity within an organisation can generate unpredicted results in terms of goods and services that meet societal demand and satisfaction.

According to the UNDP (2009: 4), internationally, there is an emerging agreement in the developing community that skills/aptitudes development are the engine of socio-economic transformation and human capital capacity development the driving force or locomotive of organisational/institutional change. Moreover, the concept of "capacity" in the context of organisational productivity improvement suggests the realisation of the highest possible yield value of a specific operation, process or system which is functioning within an ideal environment (Kruger, 2019: 229). Nevertheless, in any organisation, including the petroleum industry, the best/full utilisation of existing capacity could be profitably achievable through a combination of facilities comprising machinery, human capital resources (labour) and existing equipment, which must be efficiently and effectively operational.

Conversely, the failure or malfunction of one of these facilities could detrimentally affect the effectiveness and efficiency of the entire organisational system. Thus, organisational capacity could determine or guarantee its ability to supply/respond with satisfaction to a community's current and future needs/necessities for goods and services sufficiently and sustainably. Accordingly, capacity development programmes take account of components that include teaching someone to do something; to do it better; efforts to support or create new organisations or strengthening existing ones; efforts to focus on education/learning and training; and efforts to improve individual rights and access to existing socio-economic facilities (UNDP, 2009: 5).

In addition, the UNDP (2009: 5) stated that an essential ingredient of a capacity development approach is “transformation”. Transformation involves new investment development and the realisation of expected change that contributes to organisational development and socio-economic transformation. In other words, transformation simply means change or improvement. In this study, transformation involves becoming something else beyond change and innovation by linking capacity development programmes to human capital capacity development, organisational development, and socio-economic transformation. For that reason, capacity development programmes were examined as a key strategy to promoting technical skills development in the workplace, boosting productivity, performance, innovation, creativity and ensuring competitive advantage in the petroleum industry; as well as supporting the process of socio-economic transformation in South Africa.

Thus, organisational transformation can only be possible if policies, programmes, and strategic plans that support the best practice of capacity development programme, whether in the petroleum industry or in the country as a whole, are matters of improvement and change. Consequently, it was significant to alert stakeholders in the petroleum industry that change, and improvement should firstly start with policies that support the development of human capital capacity, prior to any other procedure of organisational/institutional change. This implies that programmes and strategic decisions for technical skills development, products and services quality improvement and development should congruently/concomitantly involve all stakeholders operating in the oil field to promoting human capital capacity development in the workplace. For example, the success for the South African vision for long-term sustainable socio-economic transformation will require policies, programmes and strategic plans improvement and development, which must also imperatively include the development of positive human capital capacity in the process of eliminating poverty, promoting employment, and reducing inequality (Manuel, 2011: 365).

The vision for developing positive human capital capacity must inclusively take account of functional, technical, and behavioural capacities development (IFC, 2014: 52). However, without drastic investments into positive human capital capacity development, the vision for socio-economic transformation could simply be delusion or unachievable, given that human capital capacity is what makes things happen in terms of improvement, change, innovation, and transformation.

Consequently, it is imperative and essential to understand that the business environment factors have a significant influence on the organisational development and socio-economic transformation process. Therefore, programmes of capacity development should also be considered as a key factor that can influence organisational productivity and performance (Smit 2011: 64 and Buss, 2010: 6). According to Hossain and Roy (2016: 1023), extensive employee empowerment through skills training programmes is expected to contribute to organisational development. This means that knowledge/skills development is a substantial ingredient for an organisation to gain competitive advantages. For example, in 2017, South African politicians were critically discussing the concept of radical socio-economic transformation (ANC 5th National Policy Conference 2017 and Gumede, 2017).

Therefore, it is certain that socio-economic transformation cannot be possible by considering only the improvement and development of the business environment factors that create opportunities and threats to organisational development, but also by considering the development of positive human capital capacity in the workplace. Accordingly, the concepts 'capacity, capacity development and capacity development programmes/interventions' are critically discussed in Chapter Two and Three further below.

1.3 Rationale for the Study

According to Kruger (2019: 470), skills development is one of the most important components of Broad-Based Black Economic Empowerment (B-BBEE), which is the government's strategic initiative to promote socio-economic transformation in imperative to ensure a significant contribution by the black community (society/people) in the economy and business sector. Therefore, skills development as a key strategy for social change and business growth is an imperative element of the B-BBEE code of good practice that implicates private sector businesses that seek to get involved in private-public partnerships and which are also expected to participate or contribute to the realisation, success, or achievement of the objectives of B-BBEE. Therefore, it is necessary to highlight that the South African society and organisations (petroleum industry) are enduring critical socio-economic problems, which are related to the deficit of positive human capital capacity.

Nevertheless, amongst the most critical challenges affecting South African society and organisations, there are situations that include technical skills shortages, unemployment, inequality, poverty, xenophobia/afrophobia; and gender-based violence (violence against women and children, rape, or sexual abuse, as well as kidnapping and killing amongst communities). Additional institutional and/or organisational challenges include factors like scarce skills development of professional operators such as chemical engineers, geologists, chemical engineers, process technologists and electrical engineers (CHIETA Report, 2014). However, by looking closely at these challenges, the researcher attempted to align the aim and purpose of this study to the B-BBEE code of good practice, which objectively considers skills development as a key strategy for social change and business growth. Moreover, as a response to socio-economic challenges affecting the South African petroleum industry, the researcher suggested the CDP-PUSH-Effects model as a proactive, reactive, and active approach in tackling the issue of technical skills shortages, skills waste, and the deficit of positive human capital capacity.

Furthermore, through the CDP-PUSH-Effects model, combined PUSH-PULL strategies of capacity development interventions and the big PUSH approach were developed and suggested as possible gears that can be applied in confronting the socio-economic challenges affecting the South African petroleum industry and society. In addition, the central part of combining PUSH-PULL strategies and the big PUSH approach was to promote positive human capital capacity development, whether in public or private organisations (including the petroleum industry). Moreover, the researcher attempted to suggest this strategic and flexible CDP-PUSH-Effects model of capacity development to empowering and improving employees' skills with programmes that enhance their enactment in the petroleum industry. Therefore, the rationale for this study was to reveal the possible effects that capacity development programmes could have on technical skills development in the workplace, identify skills priorities, skills training needs and skills development plans and processes in the workplace.

Thus, the CDP-PUSH-Effects model provides a toolkit of strategies and resources necessary for the skills development process in the workplace. Accordingly, required scarce skills improvement/development, petroleum industry development and socio-economic transformation are objectives that cannot be achieved without innovative

programmes of skills development for people in the workplace. In other words, without capacity development programmes in the workplace, changing the curve in terms of scarce skills shortages, the deficiency of positive human capital capacity, inequality, poverty, and unemployment could be impossible. Moreover, it is rational to assume that any strategic plans targeting societal or organisational improvement, change and transformation will not be achievable without human capital capacity development. This simply implies that human capital capacity development must be part of the strategic plans and efforts that harmonise organisation's long-term competences/skills development in relation to the forecasted technical skills demand (Kruger, 2019: 229). A model of capacity development that guarantees the best performance of operations, processes and systems in the workplace will have to be improved or developed.

However, any model of capacity development must emphasis or gives priority on the type of capacities required by an organisation, in line with the critical demand for specific skills. Rationally, Kruger (2019: 233) recommended that the best practice of capacity development programmes as a tactical strategy to promoting human capital capacity development, petroleum industry sustainable development and socio-economic transformation might generate:

- A major bearing on the financial performance of the petroleum industry;
- A major impact on the production of the petroleum industry;
- The management of the petroleum industry could be directly influenced by available developed capacity (managing an organisation with developed capacities may be a greater deal than managing an organisation with inequitable or low capacity);
- Capacity development could influence the capability of the petroleum industry to come across communities' requirement (demand) for environmental quality goods and services;
- Sufficient developed capacities can guarantee or generate more profitable operations in the petroleum industry (e.g. oil field services development);

- The availability of developed capacities could determine the competitiveness of the petroleum industry; and
- The availability of the developed capacities could also determine the speed of the delivery of goods and services to the community (customers).

Moreover, the availability of developed capacities can guarantee a successful improvement and achievement of the organisational vision, mission, goals, objectives, values and enhance the culture of competitiveness, creativity, and innovation. In addition, communities' culture/behaviour improvement or change by the effect/influence of active capacity development interventions could generate a socio-economic transformation process in the country (Active participation of employees in the process of solving critical socio-economic challenges affecting public and private organisations and communities). Thus, direct, indirect, and induced effects from technical capacity development in the petroleum industry, as well as positive human capital capacity development in various public and private sectors of the economy in the country, could be predictable.

1.4 Motivation for the research

The motivation for this research study comprised:

- The identification of the potential effects of capacity development programmes best-practice on human capital capacity development such as employees' competencies, retention policy and income improvement, petroleum industry performance, value chain development and socio-economic transformation in the country;
- Encouraging the improvement or development of appropriate learning infrastructure in the workplace (petroleum industry), supporting learning interventions and ensuring the stability or continuity of required technical skills into the forthcoming years and ensuring that there is need to constantly improve the skills development structure or agenda for greater industry commitment with learning (educational) institutions to come across the requirements of the petroleum industry and to take advantage of available resources; and

- Studying, enhancing, and developing an innovative capacity development programmes model that promotes technical, functional, behavioural, and other scarce skills development in the South African petroleum industry.

1.5 Focus of the study

According to the UNDP (2009: 5), capacity development programmes are the engine or locomotive of human capital capacity development. This implies that if organisations (public or private) envisage contributing to socio-economic transformation, then communities, employees/workers and/or managers in the workplace must be empowered with innovative and creative knowledge/skills/abilities that will enable them to realise and achieve their full potential through capacity development programmes. Therefore, understanding the role of capacity development programmes on human capital capacity development in the petroleum industry for sustainable socio-economic transformation in the country was the focus of this study. Mostly, the main problem or phenomenon examined in this study involved “the critical issue of technical skills shortages” or “scarcity of technical skills”, which is currently affecting the South African petroleum industry development.

Hence, the idea was to explore and identify the key factors that are causing technical skills shortages in the petroleum industry, as well as to examine the factors (approaches) that can contribute to promoting both technical skills development and positive human capital capacity development in the workplace. For that reason, research indicated that the SAPIA’s Board of Governors has agreed to approve a petroleum industry skills development framework for greater industry engagement with educational institutions to come across the requirements of the petroleum industry through the maximisation of available resources as a response to skills development issues (SAPIA Report, 2012: 5). Unfortunately, despite the efforts engaged to provide the skills development framework approved by SAPIA’s Board of Governors, the South African petroleum industry is still experiencing critical challenges in terms of developing technical skills or positive human capital capacity in the petroleum industry.

Therefore, it was assumed that these challenges might be possibly fuelled by or associated with the lack of capacity development programmes best-practice and the lack of appropriate interventions in terms of policies, programmes and strategic plans

best-practice or the lack of scarce skills development in the petroleum industry. In addition, apart from the business environment instabilities, socio-economic crises in the country can also be associated with the lack of positive human capital capacity development (SAPIA Report, 2012 and Higher education and training Report, 2016: 14). Nevertheless, the value of this study is based on the role that capacity development programmes can have on organisational/institutional development and socio-economic transformation through positive human capital capacity development. Developing positive human capital capacity involves developing constructive behaviour and attitudes towards the best practice of the knowledge and skills acquired (Hossain and Roy, 2016: 1032). Constructive behaviour within an organisation could influence organisational performance, productivity and generate competitive advantages. Therefore, the additional focus of this study was to develop a model of capacity development programmes that will contribute directly to developing technical skills and positive human capital capacity in the petroleum industry.

1.6 Problem statement

Many countries and organisations on the African continent, including the South African petroleum industry, are lacking the substance/ingredient needed to review plan and implement their national and local development strategies. Most of these countries or organisations have blameless policies, programmes and strategic plans that even predict and anticipate socio-economic activities or expected objectives to be achieved in the future. Nevertheless, socio-economically, many African countries/organisations are failing to reach the standard of their expectations because they are not giving careful attention to capacity development programmes that address the issue of human capital capacity development as a significant factor in socio-economic transformation.

Unfortunately, the deficit of positive human capital capacity, technical skills shortages and skills waste in several public, private organisations are amongst the critical challenges affecting organisational development, and socio-economic transformation processes in many countries on the continent. Furthermore, countries and organisations are failing to improve or develop mechanisms, models or approaches that can ensure the best practice of existing policies, programmes, and strategic plans, which promote organisational development and socio-economic transformation.

Limited evidence of capacity development programmes best practice and of appropriate mechanisms to monitor and evaluate capacity development frameworks have been indicated by most researchers in this field as a critical issue affecting the organisational development process in most African countries (The United Way of Calgary and Area Report, 2011). According to the OECD (2006: 7), the lack of socio-economic transformation on the African continent shows evidence of limited positive human capital capacity development, technical skills development, as well as limited capacity development programmes best practice. Moreover, limited technical skills development and skills waste in the public and private sectors were identified as a major obstacle affecting organisational productivity, performance, and competitiveness, as well as socio-economic sustainable development. According to Augood (2010: 24-25), there are several challenges affecting the petroleum industry development process on the continent, including the South African petroleum industry.

In most cases, recorded challenges may be grouped into three major factors. These factors comprise the instability of the business environment; the insufficient level of public/private awareness to promoting positive and technical human capital capacity development; and the lack of policies, programmes, and strategic plans best-practice, which consequently slow down and affect efforts and resources that support socio-economic transformation (Smit 2016: 60). According to the OECD (2015: 16) and Smit (2016: 56-60), barriers to up-skilling the workforce in the petroleum industry are directly or indirectly linked to internal and external organisational factors; the lack of information about capacity development impacts and training opportunities; insufficient funding for skills training programmes; small-scale investment in training procurement and concerns relating to employee turnover.

Therefore, countries and organisations that are experiencing socio-economic underdevelopment are also undergoing a deficit of positive human capital capacity, technical skills shortages and skills waste and employment inequality. These countries or organisations are also challenged with complex problem-solving matters aligned to the crisis of positive human capital capacity development, a lack of critical thinking skills improvement, a lack of decent/fitting judgement and appropriate decision-making, as well as perceptive, rational, or cognitive flexibility. However, the deficit of positive human capital capacity in most African countries/organisations is associated with people's behaviour and culture deterioration, which can be clearly viewed through

various unlawful practices that continue to downgrade the socio-economic transformation process. For example, issues such as corruption, inequalities, and gender-based violence, as well as skills waste in the workplace can be related to deplorable practices fuelled by the deficit of positive human capital capacity in the country. Therefore, it is understandable that the lack of capacity development programmes in the workplace can cause various detrimental or negative effects, slowing for example teams' efforts for productivity improvement, innovation and creativity and competitiveness skills. The South African Department of Energy Report (2010) specifically underlined that the challenges affecting the South African petroleum industry development process were associated with issues such as asymmetrical human capital capacity development, the lack of mentorship programmes and a failure in the culture of the working environment.

Additionally, the SAPIA Report (2016: 6) emphasised that challenges experienced by the South African petroleum industry are linked with the following factors:

- Technical skills shortages (a necessity for a high level of technical skills development);
- A requirement for an improved and resilient learning infrastructure with fitting/suitable petroleum industry's learning programmes (interventions) to ensure continual skills development of employees into the future; and
- The necessity for an improved framework of skills development: a suitable framework can contribute to better and larger industry commitment with learning (educational) institutions for meeting the necessities/requirements of petroleum industry development and of maximising obtainable/accessible resources.

Thus, in light of the aforementioned, the South African petroleum industry and society will be required to improve policies, programmes and strategic plans that support positive human capital capacity development, technical skills, functional skills and behavioural skills development. In addition, capacity development programmes (best practice) must be explored constantly as a key strategic approach in tackling the challenges of scarce skills affecting the South African petroleum industry. Accordingly, it can be acceptable that the best-practice of programmes of capacity development in

the workplace can generate a common qualified labour pool. Most studies aligned to the challenges affecting petroleum industry development have indicated that developing comprehensive competency systems in the workplace can ensure that employees perform effectively and safely in complex and hazardous environments (Augood, 2010: 24 and IPIECA, 2011: 10-11). In addition, Augood (2010: 24) and IPIECA (2011: 10-11) denoted that companies which develop capacity development programmes are likely to support and improve local refining capacity, as well as promote the petroleum industry's value chain activities development. This implies that any deficit of capacity development programmes in the workplace can cause a major barrier for employees to participate effectively and efficiently in the process of promoting the petroleum industry's development and socio-economic transformation in the country. Therefore, capacity development programmes in the petroleum industry are expected to ensure a greater contribution in terms of supporting sustainable positive human capital capacity development, technical skills development, functional skills development, and behavioural skills development.

In addition, capacity development programmes in the workplace can contain pressure from international financial institutions that want to see increased private sector participation in the processing/refining sector, greater transparency and accountability and a more economical use of capital (Augood, 2010: 24). Thus, capacity development programmes in the petroleum industry can significantly strengthen the abilities of employees so that socio-economic transformation processes cannot be compromised.

1.7 Aim and purpose of the study

This study aimed to explore capacity development programmes for socio-economic transformation in South Africa, through the case study of the South African petroleum industry. It examined the critical factors affecting the effective implementation and the use of capacity development programmes in the South African petroleum industry towards promoting positive human capital capacity development (including technical skills, functional skills, and behavioural skills development) as a driving force or pillar of socio-economic transformation in the country. It also examined the challenges influencing the effective implementation of capacity development programmes for job-related skills development of employees in the South African petroleum industry.

1.8 Objectives of the study

The research objectives intended the following:

- i. To examine factors that contributes to socio-economic transformation in South Africa;
- ii. To identify the nature of capacity development programmes in the South African petroleum industry;
- iii. To investigate how capacity development programmes can contribute to social and economic transformation in South Africa;
- iv. To investigate the extent to which capacity development programmes focussing on skills development have contributed to socio-economic transformation in South Africa;
- v. To identify the probable challenges/barriers affecting the best-practice of programmes of capacity development in the South African petroleum industry;
- vi. To explore international models of capacity development programmes that promote human capacity development, petroleum industry development and socio-economic transformation; and
- vii. To develop an appropriate capacity development model aligned to human capital capacity development for the South African petroleum industry's development and socio-economic transformation.

Considering the above objectives, it is significant to emphasise that objective (3): Investigating how capacity development programmes can contribute to socio-economic transformation in South Africa; as well as objective (5): Identifying the probable challenges/barriers affecting the best practice of programmes of capacity development in the South African petroleum industry were particularly measured as the overarching objectives that aligns with the title of the study. Therefore, objective 7 (developing an appropriate capacity development model aligned to human capital capacity development for the South African petroleum industry's development and socio-economic transformation) discussed about the reactive, proactive, and active approaches towards responding to the main questions of this study, which consisted

of finding out how capacity development programmes can contribute to socio-economic transformation in South Africa and what could be the probable challenges/barriers that are affecting the best-practice of programmes of capacity development in the South African petroleum industry?

1.9 Research questions

The research questions emanating from the research objectives focussed on the following:

- i. What factors contribute to socio-economic transformation in South Africa?
- ii. What could be the nature of capacity development programmes in the South African petroleum industry?
- iii. How can capacity development programmes contribute to socio-economic transformation in South Africa?
- iv. How has capacity development programmes focussing on skills development contributed to socio-economic transformation in South Africa?
- v. What are the probable challenges/barriers affecting the best-practice of programmes of capacity development in the South African petroleum industry?
- vi. What could be the international models of capacity development programmes that promote positive human capital capacity development, petroleum industry development and socio-economic transformation?
- vii. What could be an appropriate capacity development best-practice model aligned to positive human capital capacity development for the South African petroleum industry's development and socio-economic transformation?

In addition to the overarching questions (3) and (5) that aligns with the title of the study, it is important to highlight that question 7 (what could be an appropriate capacity development best-practice model aligned to positive human capital capacity development for the South African petroleum industry's development and socio-economic transformation?) was very essential in describing the formulation and

description of the potential model of capacity development aligned to the development and retention of technical skilled employees in the South African petroleum industry.

1.10 Significance of the study

It was projected that the findings of this study would assist as a useful source of information to different petroleum corporate groups and communities regarding the socio-economic impacts generated by capacity development programmes in the process of managing efforts and resources that can improve human capital capacity development in the workplace (petroleum industry). The South African government (Department of Energy: petroleum industry sub-sector), SAPIA, CHIETA, SETAs and the workforce community, public and private investors could gain valuable information and knowledge about the role of capacity development programmes in supporting the petroleum industry value chain development and socio-economic activities development. Two aspects are significantly indispensable to understand in this study:

- Firstly, this study on capacity development programmes in the petroleum industry is expected to raise awareness in relation to the best practice of policies, programmes and strategic plans that promote human capital capacity development in the workplace and to invest more efforts/resources in employees' skills development; as well as the conditions for petroleum industry performance, productivity and socio-economic transformation in the country;
- Secondly, the development of positive human capital capacity in the petroleum industry, as well as in other public and private sectors of the economy could be a key factor in making profitable decisions that promote long-term economic growth. The effects of positive human capital capacity development could consist of new employment opportunities, poverty, and inequality alleviation amongst social groups, as well as direct, indirect, and induced impacts through the petroleum industry's value chain development, oil services development and related organisations' development.

In addition, the CDP-PUSH-Effects model, suggested by the researcher as a suitable approach to tackling skills shortages and promoting positive human capital capacity development in the South African petroleum industry, could also influence legal and

regulatory changes for technical, functional, and behavioural skills development in the workplace. The best practice of the CDP-PUSH-Effects model could generate or create opportunities for amplified demand for more affordable socio-economic infrastructure (public services improvement and development, housing, health and educational, road and transportation system development).

Legal and regulatory changes for human capital capacity development in the workplace could be a key factor that can facilitate on one hand the best practice of the CDP-PUSH-Effects model in the petroleum industry and on the other hand, it can promote the best practice of capacity development programmes that equip individuals with the required skills training programmes, information and knowledge which empower people to perform efficiently and effectively in the working environment (Buss, 2010: 7). Significantly, the value of this study can be appreciated by means of facilitating legal and regulatory changes to establish an enabling environment where organisations, institutions, and agencies at all levels and in all sectors enhance/improve the elaboration of management structures, processes, and procedures.

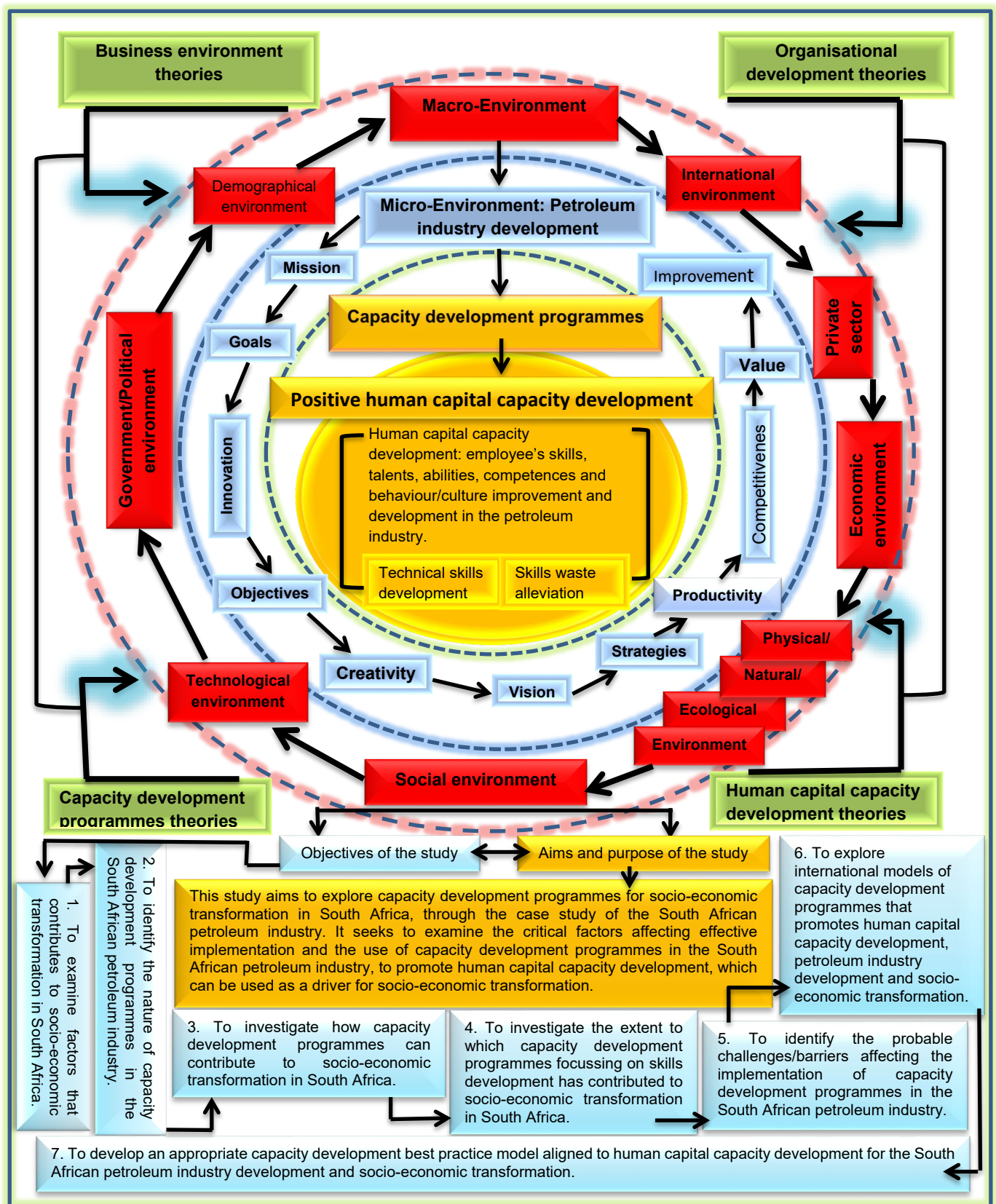
Consequently, any legal and regulatory changes that promote capacity development programmes in the workplace could also contribute to or support sustainable scarce skills development, economic growth, employment creation and poverty and inequality eradication; as well as promote positive and productive citizens by aligning their skills with national strategies for growth and development (Folscher, 2006: 7). Thus, capacity development programmes as a fundamental factor in promoting human capital capacity development, petroleum industry development and socio-economic transformation is a matter of continual exploration and investigation, given that public and private organisations will constantly require skilled human capital for performance, productivity, and competitive advantages in the workplace.

1.11 Conceptual framework applicable to the study

In line with the motivation, aim and objectives stated for this study, Figure 1.1 reflects the conceptual framework applicable to this research, which links the aim and objectives of the study to the relevant literature associated with the problem statement (phenomenon). Therefore, the Business Environment theory (macro and micro-environment theories), Organisational Development theory, capacity development

programmes and human capital capacity development theories backed and illuminated the research process in terms of developing positive human capital capacity in the petroleum industry. These theories were useful in providing the necessary information on how capacity development programmes can significantly contribute to the process of equipping employees with new/improved knowledge/skills/talents/abilities/capacities and improving the culture of excellence that enables them to remain competitively and productively relevant in the workplace. Moreover, Figure 1.1 shows the linkage between capacity development programmes and theories related to human capital capacity development, petroleum industry development and socio-economic transformation.

Figure 1.1 Conceptual framework linked to this study



Source: Self-generated by the researcher

Figure 1.1 postulates the main theories and concepts linking capacity development programmes to the aim and objectives of this study. These theories and concepts were explored to identify the factors causing the shortage of technical skills in the petroleum industry and that contribute to developing positive human capital capacity for societal and organisational well-being. Furthermore, the conceptual framework displays the overview of the study, summarises, and creates an understanding of the link-effects between capacity development programmes, human capital capacity development, petroleum industry development and socio-economic transformation.

The colours red, green, blue, and yellow used in this conceptual framework are significant. Each colour displays and explains the nature of information that relates to it. For example:

 **Red:** indicates the macro-environmental factors that can create opportunities and threats, which also can positively or negatively influence the petroleum industry's development. In effort to gain competitive advantages, the petroleum industry will require capacity development programmes usage for human capital capacity development in the workplace. Employees/workforce capacity development in the petroleum industry is very important given that the macro-environment factors can influence the petroleum industry directly or indirectly through the effects of interest rates on financial management or legislation that human resources management must comply with (Erasmus, 2014: 108-109);

 **Green:** denotes relevant and available theories which relate to the aim and objectives of the study, and which were explored and examined as pillars in supporting the groundwork and development of this study;

 **Blue:** displays the micro-environmental factors, namely variables over which management has complete control. It includes the vision and objectives of the organisation, the functions, and resources, as well as policies, programmes, and strategic plans of the business. Therefore, investing on human capital capacity development is a strategic factor of organisational performance, given that the strengths or weaknesses of the business are particularly aligned to human capital capacities and the best practice of available resources and policies, programmes and strategic plans implemented within an organisation.

However, human capital capacity development in the petroleum industry could provide competitive advantages over its competitors, whilst a deficit of positive human capital capacity, technical skills shortages and skills waste could create limitations to the petroleum industry development process. Limitations can cause less competitive disadvantages to the petroleum industry amongst its competitors.

Developing human capital capacity in the petroleum industry is a major strength that allows management to maximise opportunities, while the deficit of positive human capital capacity, technical skills shortages and skills waste are weaknesses that could cause more threats to the petroleum industry development process (Erasmus, 2014:106). Thus, improving or developing human capital capacity development in the workplace (petroleum industry) can enable the petroleum industry to gain opportunities and deal with threats that may suddenly occur from the macro-environment factors or business environment instability. The Blue colour also refers to the purpose and objectives of this study; and



Yellow: displays the heart of this study. It describes the role of capacity development programmes in human capital capacity development, petroleum industry development and socio-economic transformation in the country. Yellow also postulates the aim and purpose defined for this study.

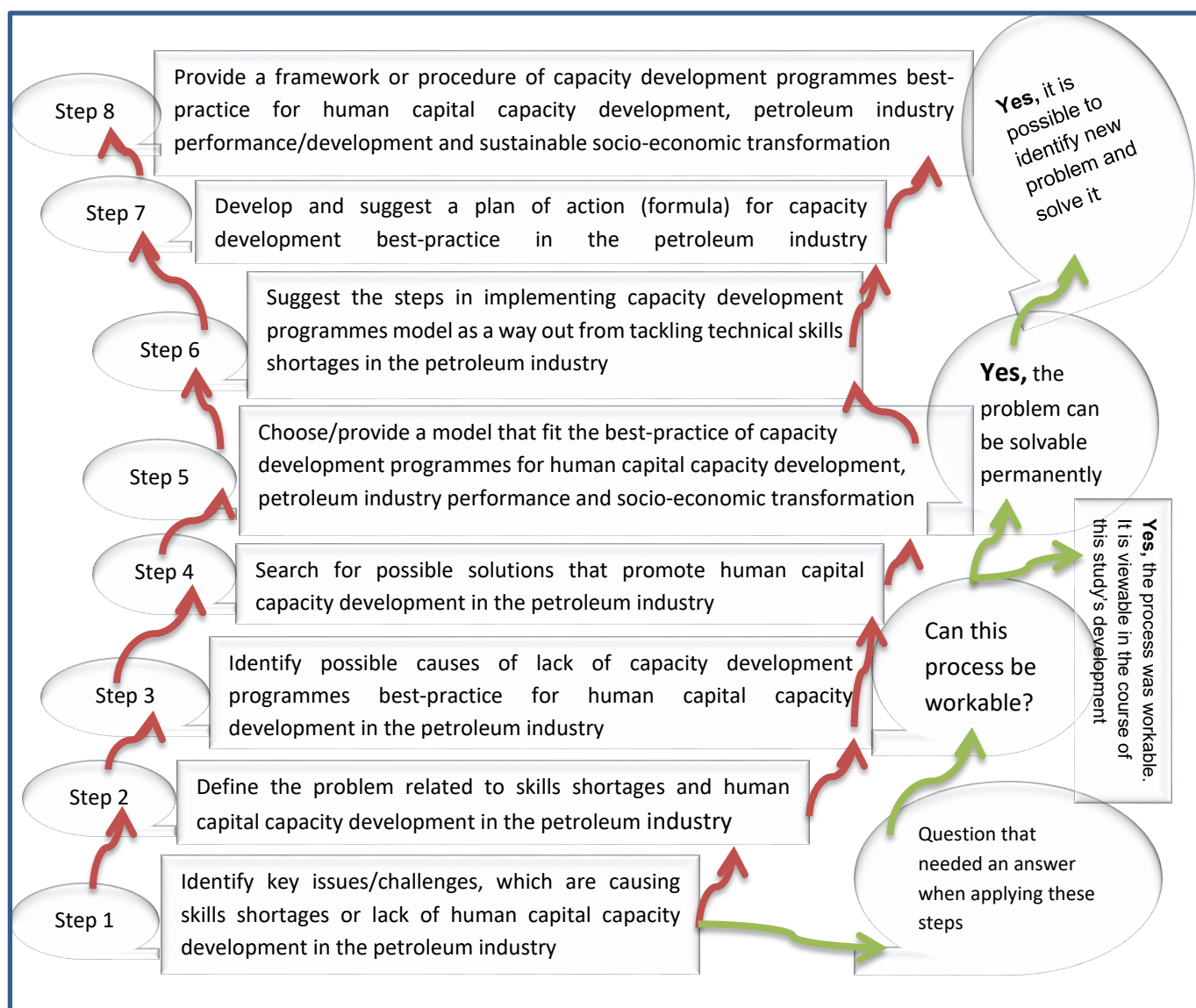
In summary, the conceptual framework describes and clarifies the link-effects between theories of the business environment, organisational development, capacity development programmes and human capital capacity development theories. It also explains the necessity for organisational vision, mission, and objectives improvement, based on job-related skills development of employees in the petroleum industry. In addition, public and private sectors, including the PESTIE factors, are displayed in the framework to study their implications/influence on the process of developing scarce skills in the petroleum industry. Accordingly, the macro and micro-environment factors were explored and examined to investigate and understand the effects of capacity development programmes on human capital capacity development, petroleum industry productivity and performance and socio-economic transformation processes

in the country. Theories related to the international models of capacity development programmes and their effects on the petroleum industry's vision, mission, strategy, goals, and objectives allowed an understanding of the following (Meyer, 2004: 223):

- The possible effects/impacts of capacity development programmes/interventions in relation to what the petroleum industry could become (vision);
- The prediction of what value capacity development programmes could add to employees' capacities, behaviour and petroleum industry productivity; and the prediction of what value capacity development could add in terms of petroleum industry performance, competitive advantages, sustainable growth or development (mission);
- The prediction of what approach can be easily applied to achieve the vision of the South African petroleum industry, using capacity development programmes as a strategy to tackling skills shortages or to developing positive human capital capacity (strategy); and
- Predictions that indicate the possible degree of success that the petroleum industry could achieve (goals and objectives) through the implementation of an appropriate model of capacity development programmes that is expected to boost technical skills development in the petroleum industry.

In light of the aforementioned, Figure 1.2 below provides steps tracked in the implementation of the research model, which is aligned to the conceptual framework. Figure 1.2 displays information that is useful to understand the way through which Figure 1.1 (the conceptual framework implementation) was fulfilled in this study.

Figure 1.2 The research model aligned to the conceptual framework



Source: Self-generated by the researcher based on the research conceptual framework

Figure 1.2 highlights the stages undertaken in the process of gathering and analysing key information related to the aim and objectives defined for this study; to capacity development programmes; employees' technical skills development; petroleum industry development; and the socio-economic transformation process in the country. In addition, Figure 1.2 illustrates the process tracked in the application of the conceptual framework, which consisted of identifying the key issues/challenges limiting technical skills development in the petroleum industry. Furthermore, Figure 1.2 attempts to address eventual possibilities which could lead to permanently solving the

issue of technical skills shortages. It suggests possibilities in exploring other solvable problems related to capacity development programmes or interventions in the petroleum industry, as well as possibilities to develop a proactive, reactive, and active approach/model that stimulates stakeholders' interventions for a quick response to pushing human capital capacity development in the workplace and promoting a socio-economic transformation process in the country. Accordingly, Figures 1.1 and 1.2 helped to reach the standard projected in achieving the aim and objectives defined for this study. Thus, the completion of the process involving the application of the conceptual framework was possibly assured through a practical usage of the triangulation method, which involved the utilisation of qualitative and quantitative approaches associated with the convergent parallel mixed methods design.

1.12 Sampling design

Brand and Kinash (2010) describe research methods as procedures, practices or systems that assist the researcher to investigate, gather and evaluate information in imperative to achieve well-defined objectives. They believe that the methods consist of the procedures or practices a researcher uses to explore, examine, or investigate required information and the approach, which is the body of knowledge or discipline that make use of these procedures/approaches. In light of the above, the sampling design selected for this study is non-probability sampling. According to Sekaran (2013: 252), non-probability sampling represents a group of sampling techniques that help researchers to select units from a population that they are interested in studying. This technique makes it very easy to know every unit of the population, which does not get an equal chance of participation in the investigation.

Therefore, in this study, the selection of the sample was made based on the subjective judgment of the researcher. Judgmental sampling allows the sample to be chosen for the specific purpose (Alvi, 2016: 13). This technique allowed the researcher to select appropriate respondents that are representatives and experts who provide advice to the government for making responsible decisions in terms of investments for petroleum industry development and human capital capacity development within the energy sector. Therefore, in this study, 400 participants were targeted, including 388 respondents for questionnaire distribution or administration and 12 interviews were planned to be conducted.

However, 292 questionnaires were completed, and 9 interviews were conducted in four organisations: members of the South African petroleum industry (SAPIA, CHIETA, Government Department of Energy: Petroleum sub-sector and Engen Refinery).

1.13 Research methodology

Exploring and evaluating the impacts of capacity development programmes on human capital capacity development for the petroleum industry development and socio-economic transformation in South Africa required mixed measurements. In this study, the triangulation approach was adopted in gathering and analysing the obtained information. According to Noble (2019), triangulation refers to the method applied to increase the credibility and validity of research findings. Heale (2013) stated that triangulation is often used to explain research where two or more methods are used, known as mixed methods and Nelij (2010) denoted that triangulation is particularly implemented in studies that combine both quantitative and qualitative approaches.

Furthermore, in this study, triangulation consisted of mixing data from quantitative and qualitative approaches linked with the convergent parallel mixed methods design so that diverse viewpoints could cast light upon the topic defined for this study. However, the mixing of data types, known as data triangulation, was often thought to help in validating the claims that might arise from an initial pilot study. Thus, in this study, triangulation approaches were applied by combining the survey data and the interview data for the purpose of reflecting interaction, priority, timing, and mixing data in the process. Furthermore, triangulation approaches were utilised in this study to achieve a clearer view of the aim and objectives, which were reached through converging both quantitative and qualitative data (Creswell, 2015: 14-15).

Therefore, together, the challenges and effects of capacity development programmes on human capital capacity development in the petroleum industry were quantifiable. Nevertheless, evaluating stakeholders' perceptions about challenges and effects of capacity development programmes required the use of mixed methods, which were proficient in revealing often complex and unpredictable socio-economic values. Face-to-face interviews were conducted with relevant and qualified employees and managers from SAPIA, the government Department of Energy, CHIETA and Engen Refinery.

Respondents from these organisations were cooperatively interviewed to gain deeper understanding and additional information concerning the influence that capacity development interventions could have on human capital capacity development, organisational development, and the socio-economic transformation process in the country. Therefore, structured questionnaires with closed and open-ended questions were distributed to employees from the abovementioned organisations by using non-probability sampling. The interview and structured questionnaires assisted the researcher in identifying challenges affecting the best practice of capacity development programmes, the requirement for technical human capital capacity development, as well as to reveal the possible impacts of capacity development programmes on employees' performance and productivity in the petroleum industry. Thus, a brief understanding of the study in the summarised structure of chapters is provided further below.

1.14 Structure of the chapters

This study comprises eight chapters, illustrated as follows:

Chapter 1: Introduction

The introduction covers an overview of the study with areas such as the background of the study, the problem statement, aim and objectives, rationale of the study and a brief scope of the literature review linked to the aim and objectives of the study. A brief description of the research methodology and design is also provided.

Chapter 2: Literature Review 1

Chapter Two provides perspectives on capacity development programmes for petroleum industry development. It highlights the understanding and description of key concepts that give a bright depiction of the link between capacity development, petroleum industry and socio-economic transformation. It also illuminates a broad and specific overview of the study by identifying the principles and theories that guided the major core concepts, as well as determinant factors and causes related to these concepts.

Chapter 3: Literature review 2

The third chapter displays the fundamental concepts that relate capacity development to petroleum industry and socio-economic transformation. More importantly, it gives readers an insight into capacity development programmes best-practice and demonstrates its impacts on petroleum industry development and socio-economic transformation processes in the country. This chapter also contains an extensive literature on the principles guiding capacity development effects and covers the styles and theories guiding capacity development best practice and human capital capacities development that will make organisational change successful. Literature on the case studies of capacity development programmes from other world regions is developed in the next chapter, Four.

Chapter 4: Case studies on capacity development programmes in the petroleum industry

This chapter explores the successful case studies of capacity development programmes implemented in the petroleum industry from other world regions. It displays the techniques of capacity development interventions applied in the petroleum industry, which produced gainful results in terms of closing the gap of technical skills shortages or developing the necessary scarce skills in the workplace. This chapter also shows the methods used to promote human capital capacity development and consequently, the direct, indirect, and induced socio-economic impacts of capacity development interventions via the petroleum industry's development from other world regions. However, both successful and unsuccessful cases of capacity development interventions in the petroleum industry were examined in this chapter. Lessons learned from each case study are also illustrated in this chapter.

Chapter 5: Research methodology

The fifth chapter addresses the research methodology approach implemented in the course of this study. It provides details concerning the method of data collection and analysis, sampling techniques, pilot study, statistical measures applied in this study, validity and reliability of the analysis utilised, delimitation and limitation, as well as the statement of ethical considerations.

Chapter 6: Data analysis and interpretation of findings

Chapter Six comprises the data analysis, discussion and interpretation of results or findings obtained. The findings were processed, analysed, and interpreted by means of PLS (version 3) and Nvivo thematic analysis (Version 12. Pro), which involved the combination of positivist and interpretative paradigms, linked to the aim and objectives of this study.

Chapter 7: Formulation of the potential model of capacity development aligned to technical skills development and retention in the South African petroleum industry: “the CDP-PUSH-Effects model”

According to Amdei (2020: 4), there is no unique model or approach to capacity development that should fit all community landscapes. In any community or organisation, capacity development represents a strategic means that can end crises through creating sustainable, peaceful, and resilient communities. This chapter focuses on the CDP-PUSH-Effects model, which stands as a potential and flexible approach developed by the researcher in attempting to fight and close the gap of technical skills shortages in the South African petroleum industry. In this chapter, discussions involved three main sections: The first section focuses on the background to the capacity development programmes framework implemented in South Africa, which helped as a pillar in the definition and formulation of the CDP-PUSH-Effects model.

The second section, which is directly reliant on the first and third sections, significantly attempts to emphasis the description and formulation of the potential model of capacity development aligned to technical skills development and the retention of skilled employees in the South African petroleum industry: “The CDP-PUSH-Effects model”. The last section of this chapter refers to the necessary steps fundamentally discussed to ensure the best practice of the CDP-PUSH-Effects model in the South African petroleum industry.

Chapter 8: General conclusion and recommendations

The eighth and final chapter concludes the study. It shows the way in which the aim and objectives of this study were achieved; discusses the main findings, explains their significance; and provides recommendations based on literature reviews and findings

or opinions and reactions obtained from structured interviews and questionnaires. Limitations, gaps, and guidelines for future research studies in relation to the role of capacity development programmes on human capital capacity development, petroleum industry development and socio-economic transformation in the country are also illustrated in this chapter. This chapter ends up with a final summary that describes the impacts of the research undertaken and demonstrates the way recommendations are linked to the research questions.

1.15 Conclusion

This initial chapter clarified the latitude and prospects to capture the study's process, which explored capacity development programmes as one of the vital ingredients of change and transformation, as well as a significant remedial or preventive approach that can promote organisational/institutional scarce skills development and retention. This introductory chapter demonstrated and summarised information linking various theories/literature reviews to the aim and objectives defined. It gave account of the framework implemented in achieving this research study.

The political, economic, and social components of the PESTIE factors were foregrounded as appropriate variables in investigating and understanding the factors that are causing technical skills shortages, skills waste, and positive human capital capacity deficiency in the South African petroleum industry. Elements of the PESTIE framework were also identified as relevant in analysing the socio-economic effects that capacity development programmes best practice could have in bridging the gap of technical skills shortages, skills waste, and positive human capital capacity deficiency in the petroleum industry. The next chapter discusses the concept of capacity and the perspectives on capacity development programmes for petroleum industry development.

CHAPTER 2

PERSPECTIVES ON CAPACITY DEVELOPMENT PROGRAMMES FOR PETROLEUM INDUSTRY DEVELOPMENT

2.1 Introduction

According to Meyer (2004: 172) and Smit (2016: 72), organisations are currently facing multiple challenges and threats. Limitations, barriers or challenges from unstable environments, increased competition and changing customer demands; the constant challenge to maintain congruence between organisational dimensions such as systems, structure, strategy, style, expertise, culture, and mutual values processes; and threats to effectiveness, efficiency, and profitability. The workforce in businesses (organisations) likewise face several obstacles/barriers in meeting expectations fulfilment (finding satisfaction) in and through work, finding dignity and purpose and fighting the obsolescence of one's knowledge and skills in the pursuit of institutional/organisational goals and achieving community/human connectedness in the workplace.

These challenges could a probable have negative impact on capacity development interventions opportunities within organisations. For example, challenges from unstable environments and increased competition could lead organisations to be responsible for more awareness on activities such as marketing and product development and reduce interest in human capacity development, which may result in a decline in undertaking skills training programme initiatives, thereby intensifying the crisis of skills scarcities. The effects of declining skills training programmes or the crisis of skills scarcities could reduce organisational performance and reduce productivity. The consequences of low performance and low productivity could also have a critical impact on organisational expansion. Hence, if this situation is experienced by key organisations in the country, then it could lead to economic recession/depreciation and to various social crises.

International perspectives on organisational capacity development interventions in this chapter focus on how capacity development activities can assist the workforce and organisations to cope, adapt, survive, and even prosper where environmental instabilities and international competition situations are unpredictable. Organisational performance, sustainability and development are becoming a process of empowering people with capacities that enable them to solve problems and take advantage of opportunities over time. This chapter specifically focusses on the organisational environment by finding ways to upgrade or improve the effectiveness of individuals, teams, and organisations' human and social changes. This chapter also explores organisational components that create ways for capacity development interventions within an organisation.

The training approach of capacity development interventions is discussed as a prelude for exploring case studies of capacity development interventions. Global perspectives on capacity development interventions help to understand the key factors that lead to the emergence of capacity development interventions and the measures applied in closing the gap of skills shortages. Capacity development interventions can differ amongst regions and organisations depending on a particular field/area where there are critical existing needs for building new/innovative capacities or developing scarce skills. Therefore, the background to the emergence of capacity development interventions and the processes that drive humans and organisations to be equipped for capacity development and performance are examined.

2.2 Background aligned to human capital and organisational capacity development interventions

2.2.1 Emergence of capacity development interventions

Lusthaus (1999: 2) stated that the concept of capacity development interventions emerged in reaction to the lack of results produced by initiatives based on technical cooperation. However, the contemporary capacity development interventions concept is based on the requirements for individual, organisational and societal change, and transformation (Borger, 2000:2). Therefore, skills shortage alleviation; human capacity strengthening; sustainability and development; organisational/institutional

performance; and sustainable development and socio-economic transformation are the most contemporary targeted objectives of capacity development interventions. Thus, capacity development principles in achieving organisational aims and objectives involve broad-based participation and an organisational driven agenda; developing organisational capacities; on-going learning and adaptation; long-term investments; and an integration of activities at various levels to address complex problems (Borger, 2000: 2). However, using capacity development interventions as an umbrella concept has both positive and negative significance. According to Lusthaus (1999: 2-3), on the positive side, many organisations and institutions have seen capacity development interventions as an integrating force that brings together a large number of stakeholders who believe that human capacity development is an important part (factor) of the overall development problem-solving.

On the negative side, capacity development interventions have taken on many meanings and have been used as a catchphrase (slogan) rather than as a concept, theory, or idea (term) for critical or rigorous development work. Furthermore, Lusthaus, (1999: 2-3) stated that many development practitioners believe that all socio-economic developmental activities involve some sort of human ability, competence, or aptitude development. This implies that development consists of communities/people' ability/capability improvement/development towards changing their societies from developing their environments. Therefore, as a useful term for learning and improving capabilities, capacity development interventions need to be more specific. Thus, globally, capacity development interventions have been grouped into four perspectives or approaches, which include organisational, institutional, systems and participatory capacities (Lusthaus, 1999: 3).

Table 2.1 describes the emergence of capacity development interventions, perspectives and approaches beginning from the 1950s to the late 1990s. Capacity development has relied upon various strategies, which consisted of making better use of existing capacity by improving networking or changes in organisational incentive systems. In addition, Borger (2000: 5) indicated that providing space for innovation or the creative use of capacities, creating new capacity (policy) by eliminating old or inappropriate capacity such as bodies, which have proven to be ineffective or have

lost their legitimacy, and strengthening existing capacity bodies constituted important strategies in perspective for capacity development interventions.

Table 2.1 Emergence of capacity development interventions

TERM	EMERGENCE AS A DEVELOPMENT CONCEPT	ASSOCIATED SIGNIFICANCE
Institution building	1950s and 60s	Objective was to equip developing countries with the basic inventory of public sector institutions that are required to manage a program of public investment; Focus was on the design and functioning of individual organisations, not broader environments, or sectors; and Imported or transplanted models from developed countries were often used.
Institutional strengthening/development	1960s and 70s	Shift from establishing to strengthening Institutions; Focus was still on individual institutions and not a broader perspective; and Tools were expected to help improve performance.
Development management/administration	1970s	Objective was to reach special public or target groups previously neglected; and Focus was on delivery systems of public programs and the capacity of government to reach target groups.
Human resource development	1970s, 80s	Development is about people; Emphasises the importance of education, health, population; and The emergence of people-centred development.

New Institutionalism	1980s, 90s	Focus was broadened to sector level (government, NGO, private) including networks and external environment; Attention paid to shaping national economic behaviour; Emergence of the issue of sustainability and move away from focus on projects; and Emerged in the 1970s through the field of institutional economics.
Capacity development	Late 1980s and 1990s	Emerged in the 1990s as an aggregate of many other development approaches' Re-assessed the notion of technical cooperation (TC); Emphasises the importance of ownership and process; and has become "the way" to do development.
Capacity development/ knowledge networks	2000s	Increased participation in capacity building; Emphasis on continuous learning and adaptation; Balancing results-based management and long-term sustainability; Systems approach and emerging talk of complex systems; Emphasis on needs assessment/analysis; Spread of ICT-based knowledge networks; and Increased donor coordination.

Source: Adapted from Lusthaus (1999: 3), Blagescu (2006: 4) and Vallejo (2015: 3)

Table 2.1 illustrates that capacity development effectiveness often works best when it is conceived as longer-term programmatic interventions that are targeted and integrated with a capacity development project cycle. However, internationally, capacity development has been described as a way to better understand the issues and implications for planning, monitoring and evaluation (Lusthaus, 1999: 3). Furthermore, the International Finance Corporation (IFC, 2014: 49) indicated that capacity development as a coordinated and participatory process engages individuals, organisations, and communities to develop and strengthen skills that increase their self-sufficiency. Furthermore, Lusthaus (1999: 3) specified that capacity development interventions as an inclusive term involved both capacity building and capacity development programmes. Therefore, Table 2.2 provides an understanding of

capacity development interventions involving the relatedness between capacity building and capacity development programmes.

Table 2.2 Capacity development interventions: Relativeness between capacity building and capacity development programmes

Capacity, Capacity building	Capacity development interventions, strengthening
Capacity is the combination of people, institutions and practices that permits countries to reach their development goals; Capacity building is an investment in human capital, institutions and practices; Capacity building is any support that strengthens an institution's ability to effectively and efficiently design, implement and evaluate development activities according to its mission; Capacity building is a process by which individuals, groups, institutions, organisations, and societies enhance their abilities to identify and meet development challenges in a sustainable manner; and Capacity building is the ability of individuals, groups, institutions, and organisations to identify and solve development problems over time.	Capacity development is a concept which is broader an organisational development since it includes an emphasis on the overall system, environment or context within which individuals, organisations and societies operate and interact (and not simply a single organisation); Capacity development interventions is any system, effort or process which includes amongst its major objectives strengthening the capability of elected chief executive officers, chief administrative officers, department and agency heads and programme managers in general purpose government to plan, implement, manage or evaluate policies, strategies or programs designed to impact on social conditions in the community; Capacity development programmes: The process by which individual, groups, organisations, institutions, and societies increase their abilities to perform functions, solve problems and achieve objectives; to understand and deal with their development needs in a broader context and in a sustainable manner; and Capacity strengthening is an on-going process by which people and systems, operating within dynamic contexts, enhance their abilities to develop and implement strategies in pursuit of their objectives for increased performance in a sustainable way.

Source: Adapted from Lusthaus (1999: 3-4)

Table 2.2 indicates that globally, various descriptions around the concept of capacity, capacity building and development were focussed on an emerging consensus that capacity development involves the long-term, contributes to sustainable socio-economic development and that capacity development suggests a shift towards the enhancement and strengthening of existing capacities (Lusthaus, 1999: 5). Furthermore, it can also be understood that from several discussions around capacity development descriptions and considerations, two approaches were set up to differentiate the nature of capacity development interventions, whether in public institutions or in private organisations. Therefore, the micro-level and macro-level perspectives were distinguished in the process of establishing a relative consensus to acceptable capacity development ways of interventions (Lusthaus, 1999: 6-7). Table 2.3 provides information and describes the micro-level and macro-level perspectives/approaches to capacity development interventions.

Table 2.3 Micro-level and macro-level perspectives/approaches to capacity development interventions

Micro-level: Private organisational approaches	Macro-level: Public Institutional approaches
▪ Capacity development suggests a shift towards the enhancement and strengthening of existing capacities; ▪ Organisational development approaches focus on the capacities of organisations, looking from the inside out, (Both private or public organisations); ▪ The approach focuses on identifying the elements or components of capacity within an organisation (Both private or public organisations); ▪ Capacity development assists organisational performance through a broad consensus on policies, programmes and strategies;	▪ Capacity development suggests a shift towards the enhancement and strengthening of existing capacities; ▪ Capacity development consists of setting the development agenda (policies, rules of the game, etc.); ▪ Capacity development leads to the process of programme identification, planning and implementation; ▪ Capacity development assists in the coordination of external resources; ▪ Capacity development is a response to the structural and functional disconnect between informal, indigenous institutions and formal

- Capacity development provides a clear sense of organisational resources and capacity gaps;
- Capacity development emphasises on organisational strategy for addressing capacity needs;
- Capacity development gives access to the means of implementing the strategy;
- Capacity development is a system that supports on-going learning and capacities development;

Organisational development: A mixture of closed and open system approaches to capacity development interventions

- In this view, organisations are seen as processing systems that change individual and system capacities into organisational results;
- Capacity development can be prescriptive, with clear steps or stages of development marked by output and capacity for change (both);
- Capacity development in the private sector is a process approach that embraces change and learning as core values;
- Individual change is important. It is also important to determine when the qualitative and quantitative changes in individuals add up to capacity development;
- Capacity development seems to be the way to do development (in private or public organisations): Development interventions aspire to foster change in terms of capacity development ventures. The objective is to improve the current abilities of a target or targets – a person, community, or network. In a systems approach, the target is the system one wants to change or improve. In the participatory process approach, the change process itself is the target of change;

institutions, mostly transplanted from outside and caused by the institution building approach;

- Capacity development focuses on the ability of the country to make optimal use of existing technical capacity and resources in a sustainable fashion;
- Capacity development refers to improvements in the ability of public sector organisations, either singly or in cooperation with other organisations, to perform their tasks; and
- Organisational development approaches apply to work with governments, non-governmental organisations, as well as other civil society and community organisations.

Organisational development: A mixture of closed and open system approaches to capacity development interventions

- Institutional approaches build the capacity to create, change, enforce and learn from the processes and rules that govern society.

The importance of globalisation and democratisation may explain the persuasiveness of the institutional capacity development definition: Much of the work of Capacity development requires knowledge of and access to the rules of the game. Laws need to be changed to ensure equity amongst groups. Policies that support poverty reduction need to be developed and ways need to be developed to help groups oppressed through informal cultural arrangements engage in the process of changing those arrangements;

- Capacity development as a social process, promotes the participation of people, organisations, and communities towards the goals of increased individual and community control, political efficacy, improved quality of community life and social justice; and

▪ Capacity development is engaged in trying to understand and predict change: Change in personal development, development management, organisational development, institutional development, etc. Part of the usefulness of capacity development is that it provides ways of understanding the world; and ▪ ▪ Capacity systems are seen as dynamic, interconnected patterns that develop over time along certain dimensions toward greater complexity, co-ordination, flexibility, pluralism, interdependence, and holism.	▪ The systems perspective focuses on the internal workings of the organisation: The bureaucratic machinery to improve capacity. However, the literature also emphasises the importance of an organisation's relationship to influences from its external environment: institutions, social values, and the political and economic contexts.

Source: Adapted from Lusthaus (1999: 5-13)

Table 2.3 suggests that capacity development interventions in organisations are for strengthening or the effective utilisation of the workforce; empowering the low-skilled workforce or developing skilled employees' capacities with the necessary skills and knowledge and giving them the opportunities, they need to improve organisational performance and competitiveness, as well as to improve their own lives. Furthermore, Table 2.3 demonstrates that organisational and institutional efforts for capacity development can be helpful when the target groups that usually require some form of capacity development or skills improvement within the specific field of work or specific managerial function are explicitly described.

Additionally, Table 2.3 highlights that capacity development can be an exit and a sustainability strategy for organisations and institutions that are experiencing a lack of creativity, a lack of innovation and/or skills shortages. However, successful capacity development intervention programmes require careful planning to target the right people and develop/build the right skills at the right time and over time. Evidence postulates that programmes of capacity development (interventions) can be more effective as soon as they are conceived as an on-going strategic commitment (IFC, 2014: 49). Thus, there could be a range of different capacity development interventions that organisations and institutions can choose to support, depending on needs, context, and desired outcomes.

The following sub-section explores the possible queries that may arise from organisations, interested in practising capacity development interventions.

2.2.2 The nature of capacity development interventions within an organisation

Organisations are currently interested to use or practise capacity development programmes as a strategy to alleviate matters involving organisational effectiveness or performance, competitiveness, productivity, innovation, creativity, and skills development. Therefore, according to the United Way of Calgary and Area Report (2011: 5), organisational effectiveness or performance require capacity development interventions to strengthen the ability of an organisation to achieve a desired outcome and to support organisations in developing and maintaining the skills, infrastructure, and resources to achieve their mission.

2.2.2.1 Capacity development interventions for organisational effectiveness and performance

According to Yamoah (2014), there is a link between capacity development and organisational effectiveness and performance. Therefore, the utmost assets of any organisation are its human capacity development. Capacity development equips employees to achieve organisational goals. Furthermore, training and empowerment employees are the key requirements to improve job performance and to help the organisation achieve its mission and business goals. Capacity development is highly instrumental in improving the productive capacity of an organisation. Socio-economically, an educated employee is a productive asset for a nation. This implies that there is a requirement to invest in human capital capacity development through programmes of skills training so that productivity improvements can be made.

Yamoah (2014: 140) denoted that capacity development improves the quality of labour in the workplace by conveying useful knowledge and skills, thereafter, raising employees' future earnings by improving their lifetime incomes. According to Anderson (2015: 3), to become effective, productive, and satisfying employees, organisations need to adapt to change. Change is required at an organisational level as socio-economic transformation aspirations increase, and technologies are developing with

a rapidly changing life cycle. Therefore, change requires organisations to develop new strategies, economic structures, technologies, organisational structures, and processes. Furthermore, employees need to learn skills as jobs change or are eliminated. However, employees within an organisation are expected to adapt to the newest direction quickly and flexibly. Anderson (2015: 4) stated that creating and managing change to create higher performing organisations in which individuals can grow and develop is a central theme of capacity development interventions in terms of organisational performance and development. According to Burke (2014: 235), performance that necessitates capacity development interventions involves financial indices to measure customer satisfaction, innovation, and internal business practices. Therefore, organisational performance is defined and measured by indices, which include productivity, customer satisfaction, quality of product or services and profit or earnings per share.

As indicated earlier, elements of organisational effectiveness, which necessitate capacity development interventions involve components that comprise organisational aspirations, strategy, organisational abilities/capacities, human resources, systems and infrastructure and organisational structure and culture. In addition, it also includes aspects of organisational life (e.g., external relations, internal structures, leadership, and management) and pillars of organisational capacity, such as relevance, responsiveness, effectiveness, and resilience (United Way of Calgary and Area Report, 2011: 5). Burke (2014: 235) also indicated that other aspects of organisational effectiveness requiring capacity development interventions involve components such as leadership capacity (the ability of all organisational leaders to create and sustain the vision, inspire, model, prioritise, make decisions, provide direction, and innovate, all in an effort to achieve the organisational mission and goals). However, leadership capacity development must take into account the improvement of factors like organisational governance, internal leadership and sustainability.

Other factors, which can support organisational effectiveness, include management capacity development. However, management capacity development involves various factors that comprise human resources, staff performance, managing performance expectations, programme staffing, staff development, salary and benefit administration and relevant policies and procedures; financial management: the ability

to manage and deploy organisational revenues and assets to ensure efficient operations; technical capacity: the skills, tools, and facilities to deliver programmes and manage its operations. According to the United Ways of Calgary and Area Report (2011: 6-7), technical capacity development comprises aspects such as programme evaluation, fund-raising skills, marketing skills and technology skills. Moreover, other factors that necessitate capacity development interventions within the organisation include adaptive capacity, which refers to the ability of an organisation to monitor, assess, respond to and create internal and external changes. Therefore, adaptive capacity for organisational effectiveness and/or performance consists of environmental learning, programmatic learning, and organisational learning. The understanding or description of the aforementioned concepts is provided in Chapter Three, section 3.7.

However, the United Way of Calgary and Area Report (2011: 7) stated that successful factors for effective capacity development interventions for organisational performance or effectiveness involve components such as being timely, having a peer-connection, being assessment-based, customised, comprehensive, competence-based, champions, culture, and readiness. Similarly, in Chapter Three, concepts such as champions, culture and readiness are also discussed and explained. Therefore, according to United Way of Calgary and Area Report (2011: 8), *the timely* factor refers to capacity development interventions activities, which are taken at an appropriate pace, neither too slowly nor too quickly. Furthermore, the *peer-connection* factor refers to successful capacity development interventions efforts, which include opportunities for peer-to-peer networking, mentoring and information sharing. Therefore, the peer-connection factor is especially important when considering board development and succession planning activities.

However, when done well, peer exchanges help individuals in sharing knowledge, skills, resources, and tools, as well as serve as a coaching group to help participants become more motivated to change. Being assessment-based therefore entails a thorough assessment of the needs and assets of the organisation and its community. Conducting an assessment for organisational effectiveness can support an organisation in pinpointing its current status and goals for growth.

The results of the assessment can then help in the planning of priorities and measures for progress (United Way of Calgary and Area Report, 2011: 8). Furthermore, an effective organisation also requires success factors like customisation. The United Way of Calgary and Area Report (2011: 8) indicated that available research suggested that more tailored and in-depth services are viewed more favourably than access to once-off workshops that fail to connect learning to sustainability after the workshop ends. The *comprehensive* success factor refers to activities, which lead to result in momentum that can continue once an individual(s) returns to their organisation. Additionally, the success factor incorporates or offers follow-up activities to continue the learning and provides tools and resources, while competence-based involves capacity development services, which need to be offered by well-trained providers that offer well-established best practices in the field of organisational capacity development.

Thus, according to the United Way of Calgary and Area Report (2011: 8), some cases of capacity development interventions for organisational effectiveness may include various techniques or methods. This consists of proposing or offering coaching and peer exchange opportunities, particularly in the area of board development, succession planning, and leadership development; workshops that are more tailored and targeted, greater in frequency and aimed at different levels of proficiencies; and offering implementation support, such as constant technical assistance and check-ins.

2.2.2.2 Effects of capacity development interventions on organisational creativity, innovation, and socio-economic transformation

According to Anderson (2015: 2-3), organisational development involves the process of improving (increasing) organisational effectiveness and facilitating personal and organisational change using interventions driven by social and behavioural science knowledge. This implies that capacity development interventions in any organisation should be ubiquitous or omnipresent because they permeate all aspects of employees' lives in the workplace. Therefore, capacity development interventions can be a locomotive of improvement, transformation and change in the workplace, in our homes, in the way people manage social relationships and in the way people engage

each other in society. According to Dawson (2014: 8-9), capacity development programmes/interventions can be linked to creativity, innovation, technology, and socio-economic transformation due to the fast pace of change and unpredictability of change processes, which seek to find the best approaches/ways to influence successful organisational change. Capacity development therefore suggests the most appropriate tools to help plan and manage change in relation to environmental changes that influence the organisational environment in terms of productivity, competitiveness, performance, and growth. These tools are further developed in the sections below. However, the usefulness of capacity development interventions for organisational development (creativity and innovation) and socio-economic transformation may come from a variety of sources and can take the form of proactive strategies or reactive responses to internal problems.

Dawson (2014: 8-9) highlighted that problems such as skills shortages; a lack of appropriate capacities or skilled manpower to handle issues related to new technologies; new products/services; management restructuring and other organisational operations; and/or external business market pressures are amongst the most significant issues that require capacity development interventions. For example, pressure from competitors; changes in government policies and regulations and change from ecological regulations and technological development can have a strong influence on organisational and socio-economic transformation. In light of the aforementioned, organisational change without capacity development interventions is impossible and socio-economic transformation without organisational change or development is impossible. Organisational change/development is therefore the process or movement over time from an ongoing present situation to an emerging and uncertain future that is sometimes planned and managed with the intention of securing anticipated objectives and is sometimes unplanned for and unforeseen (Dawson, 2014: 8).

However, organisational change or development depends on considering new ideas on the speed, direction, and choices for change. It is therefore imperative to emphasise that creativity emerges amid new ideas development, which is closely linked to both change and innovation. Thus, it is significant to understand that capacity development programmes within an organisation can provide an opportunity for

employees to develop the culture of creativity and innovation that allow the organisation to change the way of doing things, to perform dynamically and to improve its contribution to the socio-economic transformation process. According to Dawson (2014: 9), creativity represents the process through which new and useful ideas are generated. This implies that capacity development interventions or capacity development programmes can facilitate processes of creative thinking, which may enable individuals or groups to find innovative solutions to unexpected problems. Furthermore, capacity development interventions may engage a wide network of people in discussions that stimulate new ideas and thinking about how to tackle longstanding issues or concerns for organisational change and socio-economic transformation (including issues such as skills shortages, unemployment, inequality, poverty, and other form of socio-economic crises).

Moreover, creativity can also be understood as a process in which people (the creators of ideas) draw on resources (knowledge, understanding, technologies) to engage in activities that may range from the simple problem-solving of everyday issues to the creation of something that is highly original or unique (Dawson, 2014: 9). This suggests that capacity development programmes can help employees to develop fresh ideas, which may be useful in changing organisational processes, products, and services, not only in ideas generation, but also in assessments as to the appropriateness of the idea to intended applications. Thus, creativity or creative fresh ideas can be considered as part of capacity development programme strategies that gain stakeholder support within organisations and can be taken up and be used in the development of new products and services (innovations and change).

According to Dawson (2014: 9), without the development of new ideas in organisations or the ability to withstand dynamic market pressures or to imagine alternative ways of doing things, organisations may lose their competitive advantages (position) and become staid and unproductive towards the shifting demands of their customers. This also suggests that managers of any organisation are required to become conscious that capacity development programmes can be considered as means or processes of creativity, which should not be left unmanaged, but that these processes require the creation and maintenance of environments that stimulate and encourage new ideas to flourish.

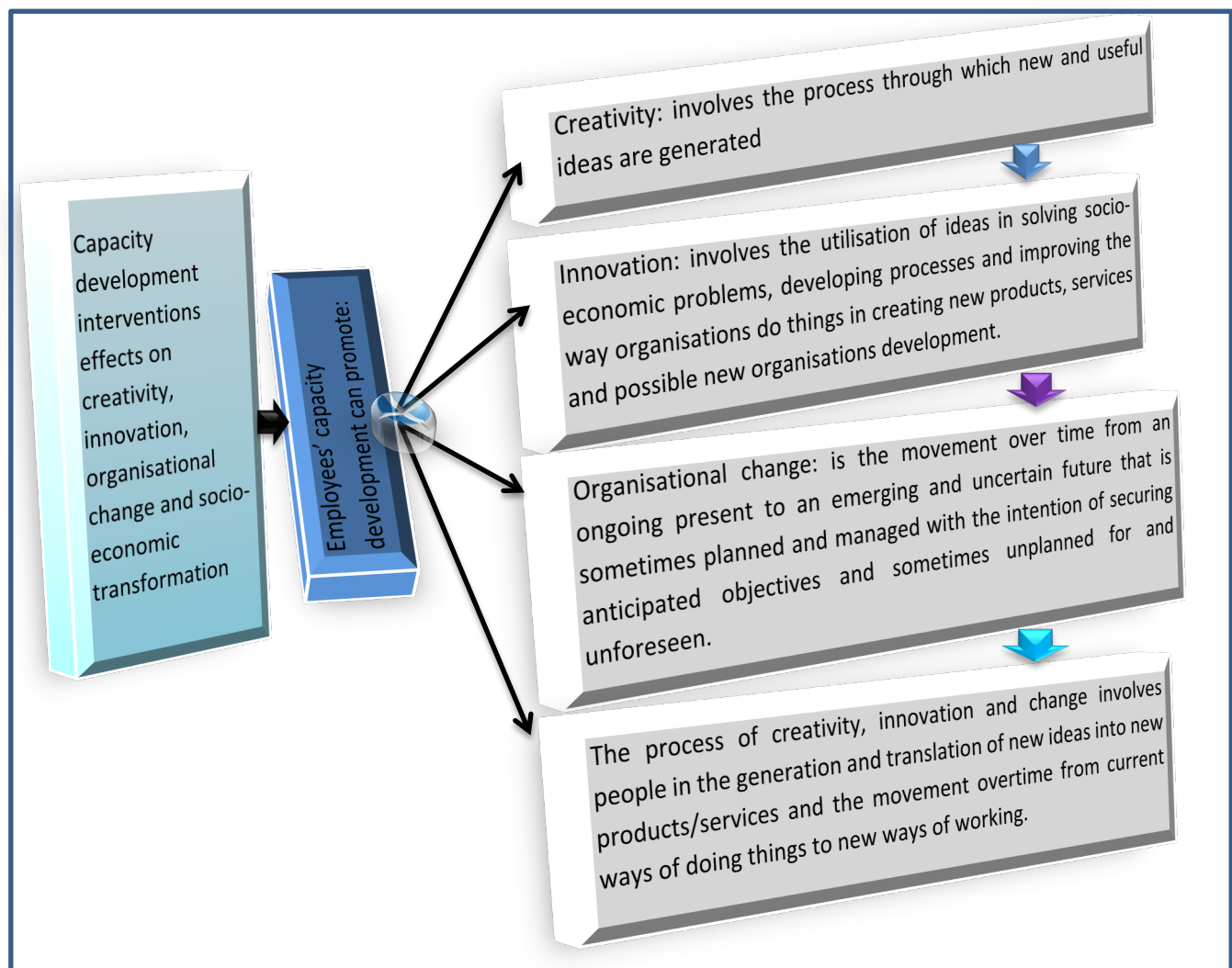
However, innovation, which is the outcome of competitive ideas development, can often be conceptualised as the translation of new ideas into commercial products, processes, and services (Dawson, 2014: 9). Therefore, for organisational development and socio-economic transformation, entrepreneurship and innovation are often seen to go hand-in-hand as new markets and opportunities are identified and exploited in the pursuit of profits and the drive for growth. Market economic forces are therefore seen to promote the need for new products and services in rapidly changing markets. Yet, in recent years, social impediments and cultural barriers have been identified as a major and often overlooked central determinant of successful change. Nevertheless, organisational change and socio-economic transformation (opportunities for new employment creation, poverty alleviation or lessening, education improvement and other socio-economic infrastructure development) are imaginable through innovation.

This is because modernisation, creativity and innovation involve the utilisation of ideas/knowledge that contribute to clarifying and solving organisational and socio-economic problems, developing processes, and improving the way things are done in creating new products, services, and new organisations (Dawson, 2014: 10). In light of the aforementioned, capacity development interventions/programmes in the petroleum industry can play the crucial role of improving employees' skills and creating opportunities in generating several ideas that could meet organisational objectives to improve market position. Therefore, decisions and choices to be made on which skills, ideas, or capacities to be developed; on how to translate these skills/ideas/capacities into new products, processes, or services; and how to implement change throughout an organisation to support the successful transformation of these skills/ideas/capacities into tangible and valuable innovations that work, are indispensable.

However, significant attention needs to be given to capacity development programmes for developing the right organisational conditions. Considerable responsiveness or awareness is required for change in leadership style, culture, structures, systems, and resources to change raw ideas into marketplace products and services, as well as to the question of how to move from an understanding of what needs to be done to developing an effective implementation programme (Dawson, 2014: 10).

Thus, long-term success is based on the ability of the organisation to create and sustain internal practices and processes that enable employees to perpetually generate new ideas and to create cultures of innovation. Change must consequently implicate different disciplines to facilitate the open exchange of knowledge and information and to recognise that long-held assumptions and traditions can inhibit new ways of thinking. Figure 2.1 illustrates the relationship between capacity development interventions effects and organisational creativity, innovation, and socio-economic transformation

Figure 2.1 Link-effects between capacity development interventions, organisational creativity, innovation and socio-economic transformation



Source: Adapted from Dawson (2014: 12)

According to Hossain and Roy (2016: 1027), competitive advantage constitutes important link-effects, through attracting, developing, retaining, and motivating the best skilled people in the workplace. This means that machinery, equipment, and other assets of the organisation could have no real economic value without qualified people that are able to make them work. Furthermore, it is significant to understand that Human capacity, knowledge, and skills are the engines of productivity and performance in any organisation. In other words, capacities and creativity of the workforce are consequence of Human capital capacity, which may yield more products and services that are valuable. Therefore, highly skilled employees can perform more efficiently their job and consequently they can reduce the unit cost of production. In addition, Figure 2.1 illustrates the link-effect between capacity development programmes, creativity, innovation, organisational change, and socio-economic transformation.

This relationship involves the process of transmitting skills, ideas, and attitudes, as well as training in particular disciplines (education). According to the OECD (2015: 5), skills development is crucial to improving individual outcomes and driving better economic performance. This implies that skills development underpin innovation, the adoption of leading technologies and, ultimately, productivity to drive strong socio-economic transformation. Skills development also boosts earnings, enhances individuals' opportunities and wellbeing, and supports thriving communities and societies. According to the Japan International Cooperation Agency (JICA) Report (2011: 5), the capacity development concept reflects the fundamental thought, which is the process by which individuals, groups and organisations, institutions and countries develop, enhance, and organise their systems, resources, and knowledge, all reflected in their abilities, individually and collectively, to perform functions, solve development problems and achieve objectives.

Therefore, one function of capacity development programmes in the organisation is the transmission of creative or innovative knowledge to employees. According to Dawson (2014: 229), capacity development interventions within organisations can facilitate opportunities for creativity, innovation and change by promoting individual critical thinking, nurturing teamwork, promoting new ideas at work and orchestrating structure, systems, and resources. Also, Figure 2.1 makes one understand that a skills

development process in the workplace can stimulate individual creative thinking and drive employees to become responsible for new products/services or new idea. Therefore, Dawson (2014: 248) indicated that there are cognitive factors linking capacity development programmes to creative achievement. These include mental flexibility, the ability to link remote associations, the suspension of judgement and originality of thinking. Furthermore, the traits of creative individuals who participate in skills training programmes in the workplace can often be associated with a preference for risk-taking, a tendency for being confident, a tolerance for ambiguity, a need for achievement and autonomy, a non-conformist tendency. This suggests that capacity development interventions can contribute to developing knowledge, which is an important determinant of creative achievement. Thus, according to Dawson (2014: 248), motivation for skills development is likely to be an essential factor that can define or describe (determine) what one will do and that being imaginative, creative, or innovative is an activity that develops over time and a process that happens in interpersonal work settings.

According to IPIECA (2004: 5), the indicators employed to measure the potential socio-economic impacts from the organisational capacity development interventions process could be many. However, the most significant include aspects that involve changes in employment and income levels; changes in public-private services demand; changes in community lifestyle quality and changes in many other related organisations or socio-economic environments, which are linked to the petroleum industry for their current/consecutive operations.

2.2.2.3 Effects of capacity development interventions on organisational productivity, competitiveness, and socio-economic transformation

According to Uddin (2016: 54), an organisation is an establishment/structure where two or more people coming together to manage and achieve a goal (or goals) and whose behaviours are managed according to specified guidelines. Therefore, people's (employee's) capacities and motivation (satisfaction) can be considered one of the tools that can severely have influence on organisational effectiveness and performance. However, an effective organisation should continually maintain a corporate or business philosophy, values, principles, and beliefs (culture) that "PULLS"

talents to stay and promotes organisational productivity, competitiveness, and socio-economic transformation. According to Yamoah (2014: 141), capacity development enhances people's ability to operate successfully in a changing socio-economic environment. Therefore, empowering employees with quality skills and knowledge programmes in the workplace raises their productivity. Consequently, the higher earnings of skilled employees reflect their superior ability acquired during the process of formal learning, as well as through skills training and knowledge acquired in the workplace. In addition, capacity development contributes on improving employees' participation in decision-making; responsibility sharing; and on the information available that ease the utilisation of their ability to act. According to Salomon (2007: 69-70), there is a link-effect between capacity development interventions and organisational productivity and competitiveness, as well as a link-effect to the socio-economic sectors that are most likely to benefit from capacity development interventions in the petroleum industry.

Dawson (2014: 11) indicated that capacity development interventions can still play a major role in an ever-changing business environment with economic fluctuations, new growing markets, financial constraints, and fierce competition. Therefore, by examining these fluctuations organisations will have to adapt, recognise, and adjust operations to environmental changes for the business to remain productive and competitive. As stated earlier in the aforementioned section, creativity, innovation and change are central to organisational productivity, competitiveness and socio-economic transformation. According to Dawson (2014: 374-375), capacity development interventions may be linked to organisational productivity, competitiveness, and socio-economic transformation through the intensity of global competition. Therefore, global competition requires organisations to develop various capacities to secure a well-educated, knowledgeable workforce and mature a raft of creative activities, not only amongst large businesses, but also in the stimulation and growth of small-and medium-sized enterprises and other innovative entrepreneurial activities.

Hence, employees' expectations in enhancing capacities or in developing skills are on the rise in line with product and service demand, as well as in line with jobs that are increasingly being called into playing a major role in making decisions on what to offer. Furthermore, in a very competitive economy, sustainable businesses depend on the

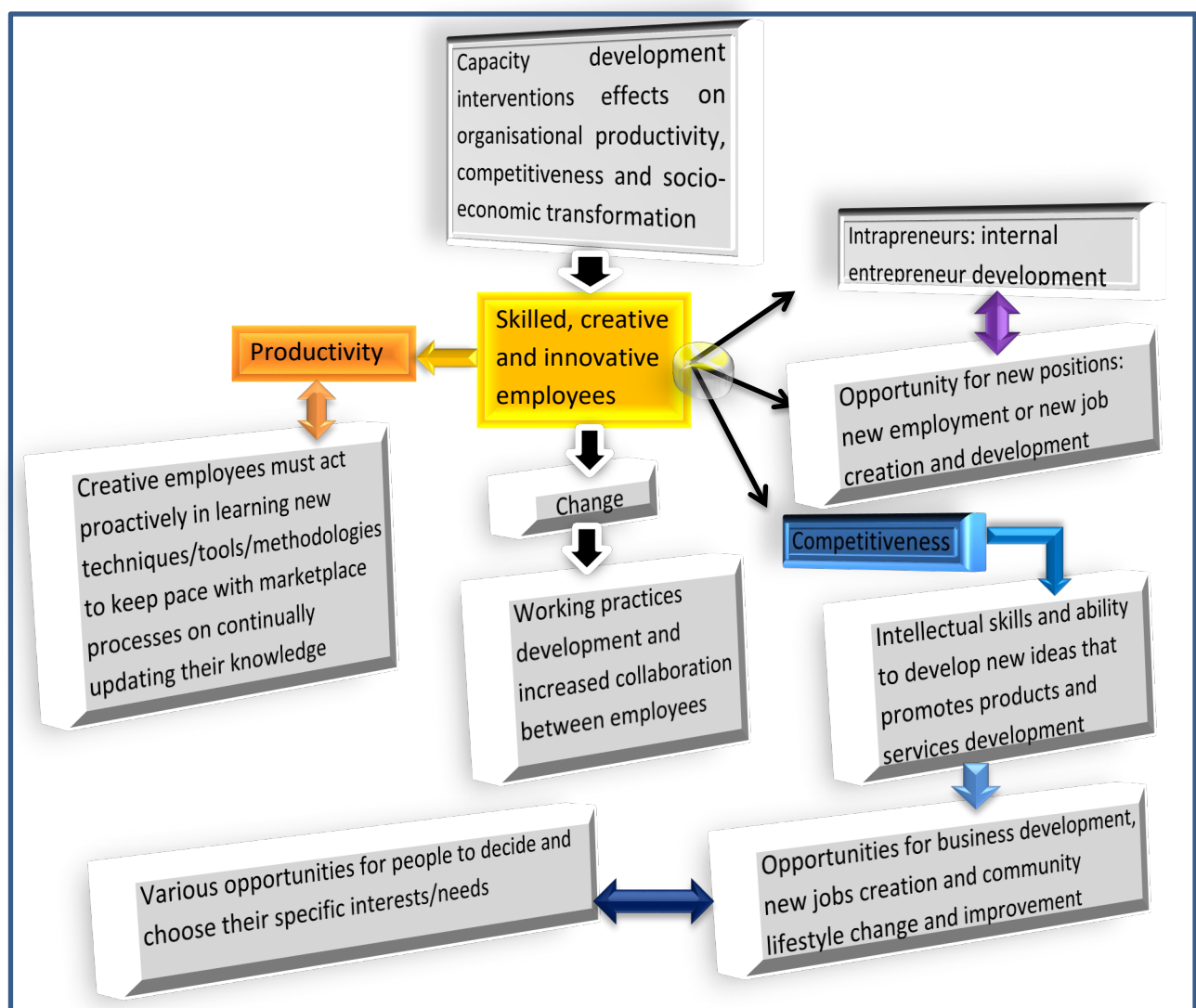
creative and innovative initiatives of employees (individuals, teams, or organisations), who recognise and pursue entrepreneurial opportunities without being overly constrained by the resources at hand. According to Dawson (2014: 376-377), capacity development provides ways for organisations to support entrepreneurial activities that sustain the creation of small businesses, which makes a significant contribution to their personal growth, to employment growth and to economic prosperity. However, socio-economic transformation is linked to capacity development programmes/interventions by means of supporting the education system in the workplace, which provides the process of developing and transmitting skills, ideas, and attitudes, as well as training in particular disciplines. A well-trained employee is likely to become useful for the organisation and for society. The usefulness of capacity development programmes to socio-economic transformations is that skills training programmes offer creative entrepreneurial abilities to employees, who then become able to use new technologies and other resources in transforming their ideas into new creative services and products (Dawson, 2014: 377).

Furthermore, creative entrepreneurs who can use technology and other resources in transforming ideas into new creative services and products are on the rise and are increasingly being recognised as central to promoting innovation and wealth in both industrialised and newly developing economies. This implies that capacity development programmes can provide opportunities for social activities improvement through innovative and creative business development. Thus, according to Dawson (2014: 377), within a competitive market, organisational productivity, competitiveness, and a country's socio-economic transformation increasingly depends on the capacity of employees (industries) to change, innovate and being creative. Organisations therefore can achieve competitive advantage by serving the needs of unpredictable, sophisticated, and demanding customers, competing against strong domestic and international rivals; and by recognising new opportunities or markets.

However, according to Dawson (2014: 377), capacity development interventions are a useful strategy in the creative economy; for it helps sustaining competitive advantage centres on the continuous identification and exploitation of new technologies and markets in the development and commercialisation of new products and services.

Lastly, but not exhaustive, the value or the effects of capacity development programmes in organisational productivity, competitiveness and socio-economic transformation is linked to creative organisations which promote employee capacity development and contribute considerably to the national economy. Figure 2.2 illustrates the link-effects between capacity development programmes, organisational productivity, competitiveness, and socio-economic transformation.

Figure 2.2 Link-effects between capacity development programmes, organisational productivity, competitiveness and socio-economic transformation



Source: Adapted from Dawson (2014: 408-409)

Figure 2.2 refers to the link-effects between capacity development programmes, organisational productivity, competitiveness, and socio-economic transformation.

Therefore, it may be understood that capacity development interventions can be considered as one of the important organisational tools that promote creative and innovative employees, who may become “intrapreneurs” (internal entrepreneurs) with a high level of autonomy. However, according to Yamoah (2014: 141), productivity is largely linked to jobs rather than of employees. This implies that employers use the level of education to select suitable employees because they consider that better-trained or skilled employees can be trained for specific jobs more quickly and at a lower cost than their less-skilled/trained peers do. However, organisations that can practice capacity development programmes may also boost employees’ skills development and develop working capacities and practices that increase collaboration or initiate staff meetings where employees are allowed to confront each other about their ideas. According to Dawson (2014:408), organisational product and service improvement or development is what links capacity development programmes to organisational productivity, competitiveness, and socio-economic transformation.

Therefore, managing creative employees and sustaining creative work environments requires balance and understanding in providing an appropriate blend of autonomy, support, and control. Creative employees are expected to act proactively in learning new techniques/tools/methodologies to keep pace with marketplace processes by continually updating their knowledge. According to Dawson (2014: 409), it is important to develop intellectual capital in the workplace that will create or generate innovative skills, abilities, aptitudes, and new competencies. Yet, organisational productivity and competitiveness depend on competent and creative employees, who need to be skilled in creating, acquiring, and transferring knowledge, as well as in encouraging behaviours that stimulate the continual search for new knowledge. This knowledge can then be used to create new skills, products and services and challenge traditional expectations.

However, capacity development programmes provide ways for employees to perpetually search and develop ideas and apply them to new problems or situations, as well as for exchange of knowledge; the sharing of viewpoints and opinions that enrich the pool of ideas from which organisations want to foster creative socio-economic activities; promoting innovative thinking and supporting cultures of change. Thus, according to Dawson (2014: 410), the socio-economic transformation process

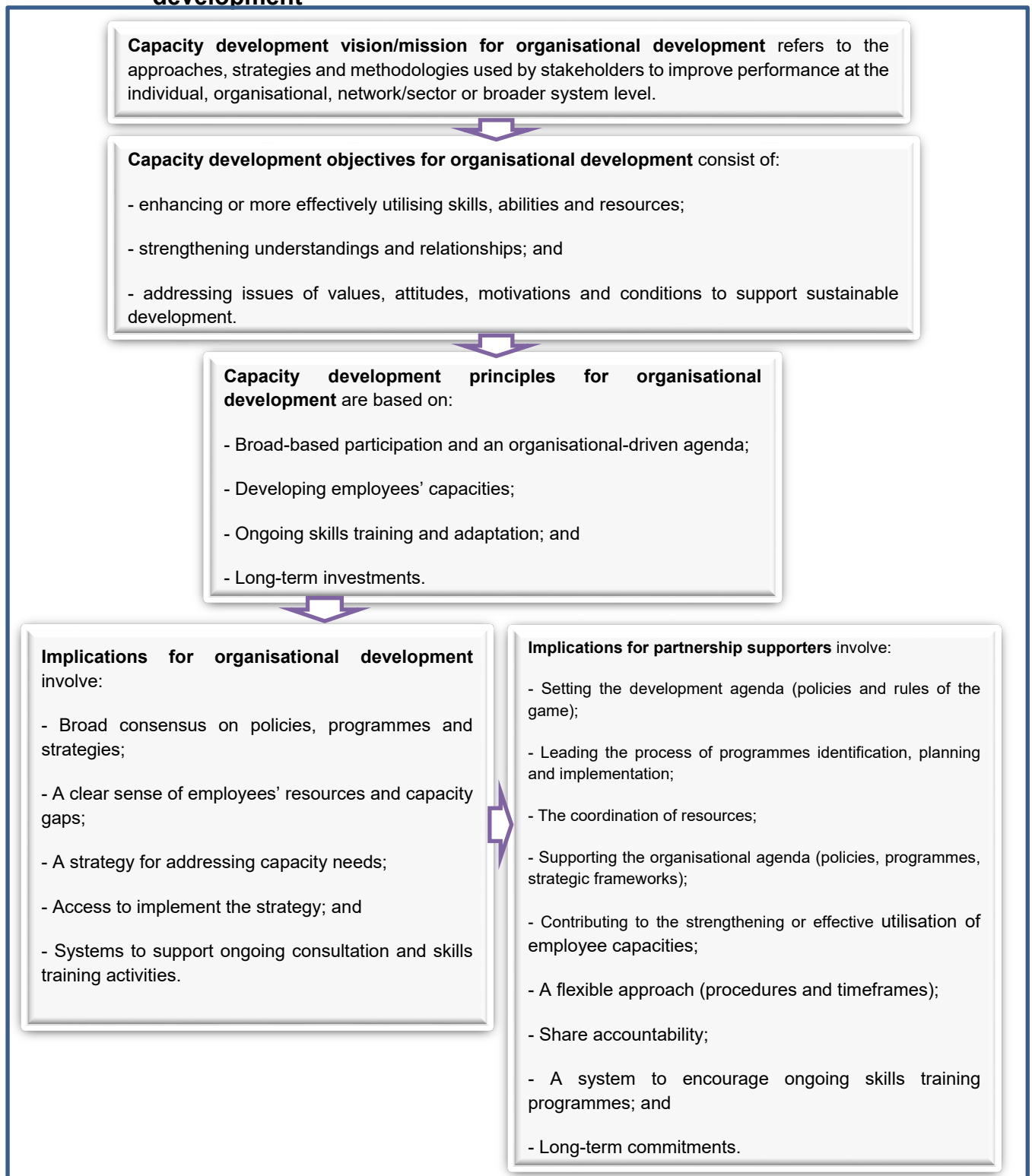
in the country involves organisational productivity and competitiveness, which are often dependent on training, education, and staff development with practical need of new operating philosophies and working procedures. In light of the aforementioned, IFC (2014: 49) and Lusthaus (1999: 3) indicated that any organisations/institutions intending to practice capacity development programmes as a strategy for organisational/institutional performance, effectiveness, competitiveness, productivity, innovation, creativity and capacity development could raise some concerns, which most often may refer to the following:

- Whose capacity is being focused upon?
- What type of development is being sought?
- Whose capacities are targeted to be developed in the petroleum industry?
- What types of capacity development programmes are needed and why capacity development programmes in the petroleum industry?
- Are these capacity development programmes needed to be pragmatic in the petroleum industry?
- Who should deliver these capacity development programmes in the petroleum industry?
- How to evaluate whether capacity development programmes in the petroleum industry can be successful?

In providing a clear understanding on the aforementioned concerns, selected case studies, which are suggested further below, outline the way in which capacity development interventions have been usefully implemented in tackling issues related to petroleum industry development. These case studies also reveal different outcomes as experienced by different organisations based on the type of capacity development interventions. However, Bolger (2000:7) emphasised that whether at the sector/network level, organisational level or individual level, capacity development in

the local or international environment involves vision, mission, objectives, principles, implications for organisational development and implications for partnership supporters. Figure 2.3 below provides a brief understanding of the capacity development interventions process for organisational development. However, as technological innovations and economic reforms are continually implemented in the workplace to speed up growth, qualitative changes required more investments on employees' competence so that employees can perform to meet the new demand. Therefore, improving significant knowledge, skills, and attitudes/values through both formal education and workplace training programmes are necessary to accelerate knowledge, skills and abilities gained in previous learning, which became largely obsolete. Therefore, skills training programmes in the workplace can advance living standards and offer equal opportunities to achieve an equal prospect in society and bridge the gaps between groups in society.

Figure 2.3 Capacity development interventions process for organisational development



Source: Adapted from Bolger (2000: 7)

Figure 3.3 illustrates the capacity development interventions process for organisational change and development. It shows the implications of capacity development for organisational structures, processes, resources and management issues and change. Therefore, partners support for organisational development includes technical assistance, budgetary or infrastructure support of organisational performance and development. However, Bolder (2000: 5) indicated that organisational performance depends on the availability of a skilled workforce and their effective use and motivation. Therefore, either capacity development interventions in the organisation encourage not only a thorough analysis of issues, but also an assessment of the way factors at other levels may support or constraint the process of organisational change.

In addition, Figure 2.3 describes the way in which employees' skills and abilities are strengthened in contributing to the organisational vision, mission, and objectives realisation. Therefore, decisions for possible capacity development interventions within an organisation are based on a host of variables, including the nature of development problems being addressed; existing programmes and capacities; current capacity strengths and gaps; and opportunities (Bolger, 2000: 6). Thus, a strategic framework is needed to understand the problem in its full dimensions for a systematic analysis of opportunities and constraints, the identification of windows of opportunity and the promotion of strategic and integrated responses.

2.3 International perspectives on capacity development interventions

According to Bolger (2000: 1), capacity development interventions appeared as an approach or process towards reduced poverty and as an objective targeting the development of individual or organisational capacity. Furthermore, capacity development was denoted as approaches, strategies and methodologies used by developing countries and/or external stakeholders to improve performance at the individual, organisational, network/sector or broader system level. In the global environment, capacity development was seen as complementary to ideas that dominated development thinking over the past decades. According to Lusthaus (1999: 1), capacity development plays an important role in terms of improving human skills development and conditions for organisational, institutional, and socio-economic

transformation. A contemporary capacity development perspective includes various approaches, strategies, and methodologies, which seek to improve performance at different socio-economic levels (IFC, 2014: 49). Therefore, the concept of capacity development interventions includes an extensive area of activities comprising institution building (new institutions establishment); institutional development (existing institutions improvement and development); human resource development (human capacities/skills or abilities improvement and development); management/administration development; and institutional strengthening (Lusthaus, 1999: 1). Furthermore, other areas of capacity development interventions include organisational development, community development, integrated rural development and sustainable development, which have been linked to the approaches of a coherent strategy with a long-term perspective and vision of social change (Lusthaus, 1999: 2).

In general, presently, the most common focussed perspectives of capacity development interventions involve competencies, capacities, or skills enhancement of targeted “right” stakeholders (right workforce, right people: right managers or right workers in terms of the capacity/skills needed or required by the organisation). As an example, according to IFC (2014: 49), capacity development in Colombia’s Ecopetrol helped civil society organisations in five regions to improve the performance of Royalty Investment Monitoring Committees. Additionally, BHP Billiton organised practice-based training programmes for its community relations professionals around the globe. The aim was to improve their knowledge, skills, and competencies in working with local communities. Furthermore, DFCU Bank in Uganda provided basic financial training programmes to current and prospective female clients and women’s organisations on topics that ranged from developing good savings habits to applying for bank financing.

However, this suggest that in an organisation such as the petroleum industry, engaging with local stakeholders to develop successful capacity investment initiatives requires a set of competencies and skills that many organisations might not have up front and may need to acquire either through training, recruitment or the hiring of consultants and others with specific expertise (IFC, 2014: 50). Table 2.4 illustrates a number of these skills and areas of expertise needed for organisational performance and development.

Table 2.4 Illustration of organisational competency dimensions and key skills areas for capacity development interventions

Stakeholder analysis and engagement	Communication and people skills
• Stakeholder analysis - ability to identify and analyse relevant stakeholder groups and their interests • Knowledge of participatory methods and techniques • Gender mainstreaming strategies • Facilitation skills – ability to conduct community workshops and multi-stakeholder meetings in a context of diverse backgrounds, values, and interests • Ability to manage expectations and foster trust	• Ability to initiate and manage partnerships • Ability to give and receive constructive feedback • Active listening skills • Ability to communicate clearly and to summarize the information received • Ability to deliver a message to different audiences • Advocacy skills • Networking/internal relationship building • Ability to get along with others
Planning and management	Monitoring, evaluation, and learning
• Strategic planning (goal setting) and operational planning (turning goals into actions) skills • Project management • Ability to anticipate issues and identify opportunities • Ability to develop alternative solutions • Ability to manage and supervise others	• Ability to design monitoring and evaluation processes appropriate to the program parameters • Ability to set up and manage baseline and data collection /reporting requirements • Ability to synthesise information • Ability to document and report results to various audiences

• Fundraising skills, including knowledge of potential sources of funds • Effective use of information and communication technologies	• Ability to reflect on results and incorporate learning back into decision-making • Knowledge of participatory methods and tools
Mediation and consensus development	Personal attributes
• Negotiation skills • Conflict resolution and consensus-development • Ability to bring people together around shared interests • Ability to break the impasse in discussions • Ability to help individuals understand the views of others • Ability to identify an issue and look at options and alternatives to resolve challenges/problems/conflicts • Team-building skills	• Integrity and transparency • Personal authority and charisma • Awareness of biases • Enthusiasm and energy • Empathy (understanding others' perspectives) • Patience and perseverance • Flexibility • Creativity/ "Outside the box" thinking • Sense of humour

Source: Adapted from IFC (2014: 50)

Table 2.4 indicates that, globally, the areas of capacity development interventions can be various and unlimited. The table also indicate that there are a number of capacities/skills and areas of expertise that capacity development programmes can cover within different fields of socio-economic activities, including the petroleum industry; these can also be many/diverse. Table 2.4 further clarifies that stakeholder analysis and engagement; communication and people skills; planning and management; monitoring, evaluation, and learning; mediation and consensus development; and personal attributes are the strategic areas where human capacity development are most needed. Therefore, capacity development programmes in the petroleum industry can help to identify and analyse situations and events; initiate and

manage partnerships; anticipate issues and identify opportunities; design monitoring and evaluation processes appropriate to programme parameters; identify an issue and look at options and alternatives to resolve challenges/problems/conflicts; and develop awareness for integrity and transparency (IFC, 2014: 50). However, organisational capacity assessment must be the first step amongst several others, before planning about capacity development interventions (human skills development programmes). The following section discusses the perspectives for organisational capacity assessment.

2.3.1 Perspectives for organisational capacity development assessment

According to Amadei (2020: 5), the process of capacity development assessment within an organisation/community is not random. It starts with the assessment of existing capacities to define the need for a specific capacity development in the organisation/community. The process involves collecting and analysing useful information consisting of organisational/community global context of the working or operating environment, cultural setting, and development level. The assessment takes into consideration the overall state of the organisation/community development, its multiple patterns of behaviour, and its structural components. However, Amadei (2020: 5) emphasised that capacity development assessment within an organisation consists of the full participation of the staff/community members and different stakeholders, individuals, and institutions through measuring/evaluating organisational strengths, weaknesses, opportunities, challenges, threats, forms of capacity and vulnerability, resources, and the hazards or adverse events it might be exposed to.

Furthermore, participatory action for capacity development assessment is necessary to identify the enabling and constraining factors in the organisation/community in which capacity development projects attempt to reveal. The participatory assessment is mostly dealing with socio-cultural issues that consist of collecting and analysing primary and secondary information (data), and/or qualitative and quantitative data. Therefore, the assessment is observed based on environmental, economic, technical, human resources factors and other variables within the organisation/community. One of the objectives of conducting capacity development assessment in the organisation/community is to be able to identify the role/actions that the

organisation/community can pay/do and cannot play/do in a short term by means of its existing capacity (Amadei, 2020: 5). Furthermore, the assessment is also about defining the level of development that the organisation/community seeks (its capacity needs) to achieve, considering the period (time frame) and addressing existing gaps between current and desired capacities. Therefore, as an example, a reactive, proactive, and active approach to closing the gap of skills shortage in the South African petroleum industry, may help identifying, ranking, planning, prioritising, and implementing capacity development programmes/interventions in the process of improving people capacity over time. Thus, the way out (the results) could also constitute a support in selecting the most appropriate technical approach for organisational/community sustainable development. Accordingly, the United Nations Development Programme (UNDP) highlighted that in assessing organisational/community capacities, five functional capacities are necessary for capacity development interventions and socio-economic transformation (IFC, 2014: 52), these functional capacities involve the following:

- **Engaging communities**

Engaging communities involves assessing and developing capacity to facilitate participatory development and multi-stakeholder processes by developing trust, using participatory methods, listening, helping to give voice to the silent majority and working towards putting community members into the driver's seat.

- **Assessing a situation and defining a vision and mandate**

Capacity development assesses and analyses the systems view, visioning, imagination, assets and opportunity assessment, goal setting and project design, which must be part of the capacity development arena.

- **Formulating policies and strategies**

Capacity development in this area includes strategic thinking; strategic mapping and development; social network mapping; prioritisation; operational planning; feasibility analysis; and risk analysis.

- **Budgeting, managing, and implementing**

In this area capacity development includes forecasting, participating, budgeting, cost analysis, funds allocation, reporting, financial oversight, and bookkeeping.

- **Monitoring and evaluating**

Capacity development focuses on setting measurable goals and objectives; defining outcomes; developing indicators; formulating and asking appropriate questions; gathering and analysing data; using tools for conducting participatory evaluations; and creating a positive learning environment.

However, in light of the aforementioned functional capacities, targeted skills development in the petroleum industry could involve several target groups within the context of capacity investment planning and management (the target group in the organisation consists of individual employees who are officially divided into formal groups according to the work/function they perform in the organisation). However, the right targeted group with the right specific capacity development programme needs are those people who require competencies and skills improvement for petroleum industry performance. According to the IFC (2014: 52-53), one of the most important challenges for effective organisational capacity development is obtaining a clear awareness on what sorts of competencies and skills need to be developed. Furthermore, the IFC (2014: 52-53) state that the United Nations Development Programme has classified two general types of capacities to be developed, including functional and technical capacities.

The UNDP has provided a useful framework for thinking about capacity development in the capacity investment context. A third category, behavioural capacity, relates to awareness and attitude improvement, which is also a key factor to achieving goals and objectives and performance and development. These types of capacities are discussed in the Chapter Three, which also provides an answer to finding out about what types of capacity development programmes need to be developed and why there is need for capacity development programmes in the petroleum industry. However, additional understanding of this question can include the necessity of developing the

right types of capacities that can contribute to petroleum industry performance and development as well as to socio-economic transformation in the country. Furthermore, the IFC (2014: 54) indicated that in developing skills effectively, one must first understand what skills/capacities already exist. However, involving stakeholders in assessing their own capacities and jointly defining a range of competency areas linked to the capacity development programmes is indispensable. Once key competencies are identified, the desired level of targeted capacity and the existing level of capacity can be determined. This can be done through a series of questions intended to investigate each skill area and to find out where the strengths and weaknesses of the group, organisation, or individual lie. Meyer (2004: 52) postulates that if an organisation embarks on new strategies and employees do not have knowledge of these new strategies, then capacity development may not be effective.

Therefore, capacity development interventions are aimed at developing the right skills and the appropriate competencies across the entire organisation. The development of such capacity development can be done in a participatory setting and should include a discussion of what success might look like. Capacity levels can be assessed using other qualitative and quantitative techniques. Additionally, the IFC (2014: 54) indicated that capacity assessment and development domains are identified to categorise problem areas and define capacity development strategies to address them. The IFC (2014: 54) also indicated that capacity development assessment includes the following aspects:

- **Problem assessment**

This involves the process of identifying problems, solutions, and actions to resolve problems.

- **Resource mobilisation**

Resource mobilisation involves the ability to mobilise resources from within and to negotiate resources from beyond the organisation/community.

- **Asking why**

Asking why involves the ability of the organisation/community to critically assess the causes of problems.

- **Programme management**

Programme management includes control by stakeholders over decisions on planning, implementation, evaluation, finances, administration, reporting and challenges/problems or conflict resolution.

In light of the aforementioned, capacity assessment appears to be a process that targets a specific workforce group such as managers or selected groups of workers from a defined department in a particular organisation. The reasons for conducting capacity assessment are to find potential needs which may be related to the lack of knowledge or new skills development and for possible immediate focus or interest linked to environmental change or organisational requirement for performance (personal differences could also be creating problems that may need capacity assessment). According to IFC (2014: 54), organisational capacity assessment involves also knowing how to improve capabilities/skills, which work through structures, processes, and strategy. Thus, assessing existing organisational capacities can provide the necessary information for pragmatic capacity development interventions within the organisation. The sub-section that follows discusses the nature and perspectives of organisational capacity development interventions.

2.3.2 Nature and perspectives of organisational capacity development interventions

Perspectives for organisational capacity development interventions involve four specific areas or parts of the organisation, which correlate/interact continuously one another and influence one another constantly. Therefore, capacity development interventions in one part can influence the other parts in terms of improving processes and change in function or responsibilities. However, capacity development interventions in the organisation refer to organisational structure, technology, physical setting, and employees' skills improvement in the workplace. Therefore, need for capacity development interventions in the structure of the organisation are necessary in facilitating the coordination of tasks, responsibilities and ensuring modification in flow of work. In addition, capacity development interventions in area of technology consist of adapting existing processing method to a more developed processing approach that can improve and increase organisational productivity and performance.

Furthermore, Capacity development interventions may be required in area of physical setting to adapt to work demand, formal interaction, social needs, technological change that can facilitate the work of employees in the workplace. Lastly, capacity development interventions come to be more significant in area of employees' skills/capacities development. Therefore, employees will need capacity development programmes/interventions to work more effectively through the improvement of their perceptions, expectations, behaviours, skills, and attitude. According to IFC (2014: 55), once capacity needs have been assessed and agreed upon, specific interventions can be identified. Mostly, capacity development interventions have different purposes and diverse resolutions. When choosing amongst different types of capacity development investments, it is useful to think about what objective a particular intervention would achieve if it is demand-driven as well as what outcomes are expected. Table 2.5 provides a list of options that can be used to identify the key components of organisational capacity development strategy, involving types of interventions and potential activities.

Table 2.5 Organisational capacity development interventions

Types of interventions	Potential activities
Training	Designing and delivering the curriculum to support the transfer of critical skills.
Partnering	Brokering new relationships and joint ventures between key actors to meet capacity development objectives
Leadership development	Serving as a role model or counsellor to emerging community leaders
Organisational development	Providing support to local organisations to enhance performance
Coaching and mentoring	Staff sharing time and expertise
Networking	Connecting communities, organisations, and individuals through formal and informal affiliations to expand service delivery, improve information sharing, set performance standards, or empower groups
Exchanges and Visits	Sponsoring exchanges to promote learning
Development of Local Service Providers	Strengthening the quantity and quality of local service providers

Direct Management Assistance	Company staff is either seconded or provide direct technical assistance

Source: Adapted from IFC (2014: 55)

Table 2.5 provides the necessary information to be considered for possible capacity development interventions within an organisation. However, skills training programmes is one of the instruments that can be applied to improve the performance of employees in the workplace. Yamoah (2014: 142-143) posited that there a link between training and job performance, and between empowerment and job performance. Table 2.6 presents the relationship between training and job performance and between empowerment and job performance.

Table 2.6 Link between training and job performance and between empowerment and job performance

Link between training and job performance	Link between empowerment and job performance
- An organisation can be only effective as the people working in it, - The provision of quality goods and services by any organisation depends on the quality of its workforce; - Training as any learning activity is directed towards the acquisition of specific knowledge and skills for the purposes of an occupation or task; - Performance is an employee's accomplishment of assigned tasks; - Employees who are well trained are also more capable in performing different task and vice versa; - Training is a key factor in job performance, - It is the combination of factors such as working environment, employee skills and knowledge, motivation and rewards, communication flow and organisational	- Empowerment refers to the ability to do things; it means to be able to do; - Employees who feel strong empowerment have qualities, which make possible a strong sense of self-esteem, successful professional performance and progress in their work; - Employees' empowerment is mainly concerned with trust, motivation, decision making and breaking the inner boundaries between management and employees; - - Empowerment enables employees to participate in decision making, helping them to break out of stagnant mind-sets to take a risk and try something new; -Link between empowerment and job performance: empowerment plays significant role in employee's

culture that significantly improve employees' performance;

- Training equips employees with skills that enable them to become more efficient and productive workers;
- Employees who are well trained often have higher motivation and morale because they feel that the company has invested in their ability and development;
- Trained employees often work better as teams because everyone is aware of the expectations and can achieve them together smoothly;
- Trained employees are also more confident in their performance and decision-making skills;
- Employees who receive regular training are more likely to accept change and come up with new ideas;
- Employees who learn new skills through training make good candidates for promotions because they have shown their ability to learn, retain and use information;
- Reliable, skilled employees can also be empowered to train other employees;
- An effective training can be costly, but save money that can be wasted on cheap inefficient training;
- Four factors contribute to an effective training:
Satisfaction with the training session,
Training content satisfaction;
Trainer satisfaction; and
Transfer of learning.
- The frequency of training received has an impact on job performance;
- Frequently training employees result in employees making fewer mistakes, getting more work done in a given time period and

satisfaction thus promoting their performance in organisations;

- Employee's participation in decision-making, delegation of power, access to information and resources and job enrichment are common forms and tools of empowerments;
- Empowerment in employees lead to attainment of targeted goals;
- Applied employee empowerment improve customer satisfaction;
- Fully empowered employees produce more customer satisfaction;
- Employee empowerment could have both positive and negative consequences especially for service firms' employees.

managers spend less time on supervision of employees;

- The lack of frequent training is not necessarily the cause of under-performance of employees;
- A problem can be solved by training;
- Whenever employees are not performing their jobs properly, it is often assumed that training will bring them up to standard;
- This is not always the case: for instance, training is less effective for problems arising from an employee's lack of motivation or lack of attention to the job;
- Training is not a cure; it cannot eliminate core problems like low capitalisation or a product line that does not meet customers' needs;
- Although training can provide extraordinary improvements in the organisation, the key to getting the best return on investment from training is to view it strategically rather than tactically.

Source: Self-generated based on Yamoah (2014)

Table 2.6 denotes the link between training and job performance, as well as between empowerment and job performance. For example, the provision of quality goods and services by any organisation depends on the quality of its workforce (training); and that empowerment enables employees to participate in decision-making, helping them to break out of stagnant mind-sets to take a risk and try something new. However, the IFC (2014: 56) stated that capacity development interventions, whether through training or empowerment could also be useful in measuring the success of capacity development efforts if there are perhaps some major challenges. Assessing results is nevertheless worth trying, given that the levels of organisational capacity are an important factor in determining whether capacity development will be sustainable. In most cases, an outcomes-focused approach that utilises both quantitative and qualitative data can be useful in measuring the changes in behaviour and perceptions amongst individuals and groups within the organisation.

However, changes resulting from capacity development efforts may take many different forms, such as those in Table 2.7 below. Once the expected changes have been defined, these can be developed into specific indicators. Therefore, according to IFC (2014: 56), the important considerations when developing a results framework for capacity development include the following:

- Objectives, targets and baseline need to be clearly defined to allow the assessment of results;
- Beneficiaries can have multiple perspectives on the nature of the conducted capacity development activities;
- The capacity development exercise should be as participatory as possible to ensure that a range of opinions is captured relating to performance;
- Changes in capacities may only be demonstrated over the long-term; and
- Results can be greatly affected by the quality of the intervention.

Table 3.7 indicates potential areas in which change may occur due to capacity development measures.

Table 2.7 Potential areas in which change may occur due to capacity development measures

Collaboration & Alliances	Culture	Learning & Innovation	Policy & Standards	Process & Systems	Strategy	Structure	Technology
A change in the way organisations work with other organisations and institutions	A change in attitudes, practices and/or behaviour	The acquisition and development of new skills, knowledge and ideas applied to overcoming capacity development	A change in the rules or policies that guide an organisation's operations	A change in an organisation's methods of operation. This includes changes in governance, financial management, fundraising and human	A change in the direction of the mission and vision in response to the external environment or some other long-term,	A change in the way an organisation organises itself to achieve an objective	A change in the way technology is used to support the achievement of capacity development objectives

		challenges		resource allocation	strategic consideration		

Source: Adapted from IFC (2014: 56)

Table 2.7 helps to understand ways in which organisational capacity development programmes can be successful. Changes such as those shown in Table 2.7 illustrate or point out potential areas in which improvement may occur due to capacity development measures. Table 2.7 also suggests that successful achievement of the vision, mission and objectives of an organisation not only depends on how and what capacity development interventions can do, but also on the implication, responsiveness, and awareness of the organisation to act for required change. Change is required mostly in the areas of collaboration and alliances; culture; learning and innovation; policy and standards; process and systems; strategy; structure and technology. However, according to the IFC (2014: 57), planning organisational capacity development interventions means having considerable information prior to engaging in capacity development interventions. Table 2.8 comprises concerns and considerations to be taken into account when inquiring about capacity development interventions.

Table 2.8 Capacity development practice pointers

Capacity development practice pointers	
Concerns	Considerations
Has there been a request/need for capacity development? Have we properly identified organisational needs? Is there a solid decision-making process in place to prioritise critical needs?	Make it demand-driven Whenever possible, capacity development should be demand-driven, responding to the interests and needs expressed by organisations
Is there a clear understanding of the wider context? Has there been a thought about potential consequences related to capacity development intervention?	Take systems View Consider the impact that an intervention might have on the broader system. For example, capacity development for selected or chosen managers and workers may be looked at with suspicion by others and may side-track it from the organisational core mission.

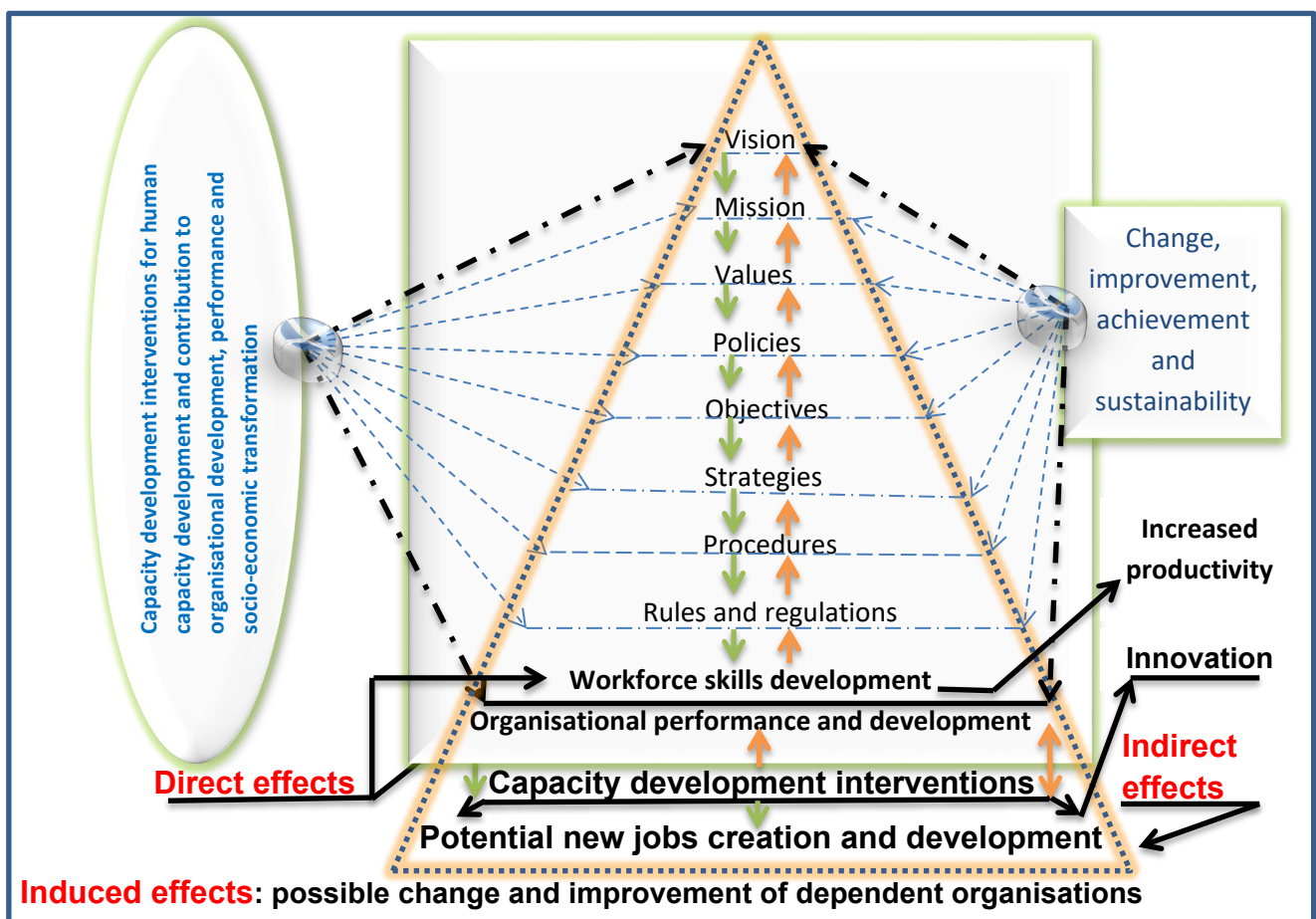
Has there been an inquiry about past capacity development efforts and their impact? Has there been an attempt to cultivate lessons from past interventions?	Understand the History Ask about other capacity development efforts in which stakeholders have participated. Find out what worked well and what did not.
Have there been identified local groups that could facilitate the capacity development initiative? Have criteria been chosen for partner selection? Which activities can be relying on local organisations?	Work Through Indigenous Entities Working with and through indigenous entities (e.g., local consulting or private contractors) to do capacity development strengthens the host organisation's service provider market and makes local experts more visible.
Has there been identification and involvement of all representative groups and networks? Has there been creation of an enabling environment for the participation of representative groups? Has the perspective of both managers and workers been taken into account as well as the gender implications of the proposed interventions?	Integrate Gender In most developing countries, gender inequality is still seen as a major obstacle to development. Closing the capacities gap between women and men involves specific efforts to create an enabling environment for women to participate in capacity development and to incorporate gender perspectives when planning these interventions.
How to ensure that all representatives participate? Is there any plan to be used for participatory methods? Is there real work around which we can organise capacity development activities to promote action learning?	Promote Action Learning and Participation Using participatory methods has been found to be the most effective way to develop capacity. Participatory approaches help people actively contribute to teaching and learning, rather than passively receiving information from outside experts. When capacity development is directly connected to a need to know, people are more motivated to learn.

Source: Adapted from IFC (2014: 57)

Table 2.8 indicates that prior information has to take into account the demand; systems view; work through indigenous entities; integrate gender; promote action learning and participation. Table 2.8 also points out that the promotion of human capacity development or skills improvement by action learning and participation through participatory methods can be the most effective way to develop capacity. Participatory approaches seem to be helpful because they support people to actively contribute to teaching and learning, rather than passively receiving information from outside experts. However, it is also indicated that when capacity development is directly connected to a need to improve knowledge/skills/capacities/abilities, people are more motivated to learn. Therefore, motivation to improve capacities or skills development require management to make every effort to willingly carry out capacity development best practice and to do their best in knowing the right needs and expectations of

workers in terms of skills development. Yet, Meyer (2004: 52) stated that there could be various phases, processes, and sub-processes towards implementing capacity development. However, some practical guidelines must be considered during the implementation of strategy, which must take into account or focus on the overall mission, vision and objectives, and other components of the organisation that are indicated in Figure 2.4. As stated and described earlier in Table 2.7 (potential areas in which change may occur due to capacity development measures), Figure 2.4 represents the pyramid of possible effects that capacity development interventions can have on organisational vision, objectives, values, policies, strategies and interests.

Figure 2.4 Pyramid of organisational capacity development interventions



Source: Self-generated by the researcher

Figure 2.4 illustrates possible direct, indirect, and induced changes, improvement and transformation that could take place within the organisation and other dependent/relative organisations through capacity development interventions. Most importantly, it indicates organisational components that capacity development can influence and

reveals the workforce skills development effects in terms of organisational performance and development. Figure 2.4, capacity development interventions can contribute to improving and achieving efficiently and successfully the vision, mission, values, policies, objectives, and strategies of the organisation, as well as keeping or sustaining a competitive, innovative, and creative culture within the organisation. Thus, potential new job creation and development, the emergence of dependant organisations and entrepreneurship (private and public enterprises) could be the socio-economic effects of capacity development programmes within an organisation such as the petroleum industry. Capacity development therefore could be a key strategy that promotes manpower skills development to support organisational performance through the vision, mission, values, policies, objectives, strategies, procedures, rules, and regulations change, improvement, achievement, and sustainability.

The actions of capacity development interventions within the organisation consist of producing tangible change and transformation to be seen from goals and objectives achievement. However, Blagescu (2006: 2) indicated that the effects of capacity development interventions for organisational performance involve the ability to perform appropriate tasks effectively, efficiently, and sustainably. Included is the list of the following elements of capacity:

- *Specified* objectives, comprising vision, values, policies, strategies and interests;
- *Efforts*, containing will, energy, concentration, work ethic and efficiency;
- *Capabilities*, taking into account intelligence, skills, knowledge and mental sets;
- *Resources*, involving human, natural, technological, cultural and financial;
- *Work organisation*, comprising planning, designing, sequencing, and mobilising.

Some of the elements comprising the aforementioned list are discussed below in Chapter Three. Blagescu (2006: 2) and Meyer (2004: 52) additionally indicated that some guidelines to be considered during the implementation of new strategies in relation to organisational vision, objectives, values, policies, strategies, and interests are as follows:

- Breaking down specific actions and activities;
- Making strategic plan and the different action plans visible so that people can view them;
- Having regular meeting or briefing session to track progress with the execution of the different phases of the plan;
- Ensuring adequate resources to implement the strategy;
- Reviewing and working towards target dates;
- Ensuring that all team members are motivated to execute the strategy;
- Providing regular feedback to all role-players employees, managers, suppliers and customers;
- In case of any deviations from the plan, necessary actions will have to be taken; and
- Keeping records of all activities pertaining to the strategy and its implementation.

Thus, the effects of capacity development interventions on organisational components such as described in Figure 2.4 are highlighted in the sections below. However, in light of the aforementioned, it is noticeable that the actions of capacity development to improve, change, achieve and sustain organisational vision, mission, values, policies, objectives, rules and regulations and workforce capacities can promote organisational

reputation, growth and development as well as a country's socio-economic transformation by way, for example, of supporting:

- The promotion of employment and the provision of comfortable housing for the company's employees;
- The attraction of other industrial operations development in the country;
- The attraction of operating specialists with specialised higher education;
- The production of quality petroleum products which will meet the most stringent quality standards, including international norms;
- The improvement of quality services in the chain of petroleum industry activities;
- Improved services and the reduction of air pollution level, due to petroleum products quality improvement and due to the use of environmentally sound fuel, and as a consequence, lower levels of disease and sickness rates amongst the population in relation to the condition of petroleum products transportation and usage;
- Development of a number of environmental protection measures with the objectives to improve the overall environmental situation in the entire country or region;
- Development and maintenance of transport networks (motor roads, railroad lines, petroleum products, pipelines or system of distribution);
- Competitive working conditions and the improvement of skills and qualifications of operating personnel; and
- The improvement of the employment situation and development of occupational education and training.

The sections that follow discuss each component of organisational development, including transformational and transactional factors which influence or necessitate improvement and change from the organisational vision, mission, values, policies, objectives, rules and regulations and workforce capacities.

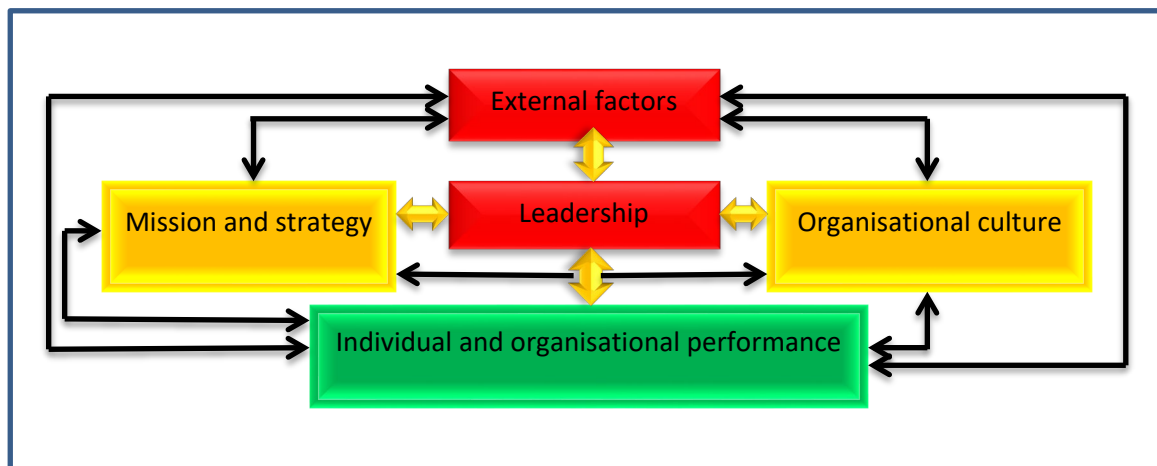
2.3.2.1 Transformational and transactional factors that necessitate capacity development interventions for organisational performance, development, and sustainability

According to Burke (2014: 228-229), elements of the organisational environment as indicated in Figure 3.4, including the external environment, vision, mission and strategy, leadership and culture in an organisation are referred to as the transformational factors that necessitate capacity development interventions. A change in any of these factors implies that the entire organisation or system will also have to change. Therefore, change consists of improving organisational capacities or performance, including the improvement of the organisational vision, mission and strategy, leadership, and culture. For example, changing the organisational vision consists of improving the core values and purposes that guide the organisation, as well as an envisioned future toward which change is directed. Therefore, according to Thomas (2015: 184), the vision provides a valued (offers a gainful, productive, and advantageous way) direction for designing, implementing, and assessing organisational changes.

However, capacity development intervention's role for organisational change implicates primarily leadership capacity development because the vision is considered as the key element in most leadership frameworks. Organisations and/or leaders are therefore responsible for organisational effectiveness and the desired future. However, also, developing a vision is heavily driven by employees' values and preferences for what the organisation should look like and how it should function (Thomas, 2015: 184). Furthermore, envisioned the organisational future represents employees' ideals or dreams of what they would like the organisation to look like or become. Capacity development interventions in any organisation are needed to empower the organisation with the kind of skills or knowledge that can help to manage, preventively and effectively, any detrimental effects that may affect organisational

performance or development. In light of the aforementioned, Figure 2.5 displays the transformational factors that necessitate capacity development interventions for organisational growth.

Figure 2.5 Transformational factors that require capacity development interventions for organisational performance and development



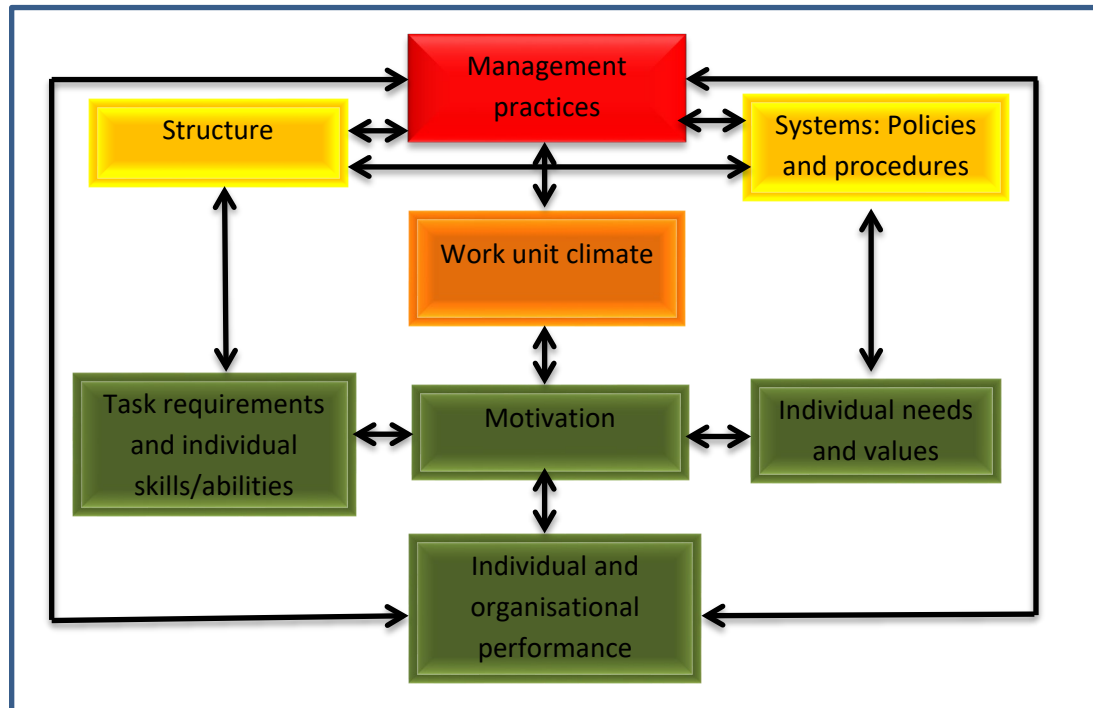
Source: Adapted from Burke (2014: 228)

Figure 2.5 indicates the transformational factors that require capacity development interventions for change, performance, and sustainable development to continually take place within the organisation. Firstly, the external environmental factors can influence organisational performance in many ways. These factors include variables such as customer behaviour and satisfaction; marketplace conditions (the extent of competition for commercial organisations); political circumstances; government regulations; world financial and economic conditions; and changing technology (Smit, 2016: 58 and Burke, 2014: 228).

The mission, strategy, leadership, and culture of the organisation are often influenced by external environmental factors, from which organisational capacity development interventions become a requirement for change that implicate organisational or individual abilities/capacities/skills development. However, organisational change for example requires that there must be congruence between the requirements of one's job, role and responsibilities and the knowledge, skills, and abilities (competence or talent) of the individual holding the job (Burke, 2014: 234). Additionally, according to

Burke (2014: 229), other factors that require capacity development interventions refer to transactional factors. These factors are specified in Figure 2.6.

Figure 2.6 Transactional factors that require capacity development interventions for organisational development



Source: Adapted from Burke (2014: 229)

Figure 2.6 illustrates the transactional factors that necessitate capacity development interventions for organisational development. For example, capacity development interventions on structural change refers to the arrangement and improvement of organisational functions and operational units that signify levels of responsibility, decision-making authority and lines of the organisation's mission, goals, and strategy. Therefore, Burke (2014: 232-235) explicitly indicated that capacity development interventions can have direct, indirect, and induced effects on management practices in addressing change that could improve organisational strategies and employee behaviour, competencies, or skills; support organisational systems; which involves policies and procedures that are designed to help; and support organisational employees with their jobs and role responsibilities.

Furthermore, capacity development interventions can also enhance the climate of collective perceptions of employees within the same work unit. These perceptions include aspects such as how well employees are managed; how they feel their

performance is recognised; how involved they are in decision-making; whether they believe they are managed according to standards that are challenging and fair; how much support they feel from fellow work unit members; and how effectively they work with other units in the organisation. According to Burke (2014: 232-235), the direct, indirect, and induced effects of capacity development interventions for organisational performance and development can be understood as follows:

- Direct effects of capacity development interventions involve expectations to support job performance and creation through three channels: Firstly, the petroleum industry will proceed to develop the capacities of the existing workforce and recruits and employs qualified people directly to run the petroleum industry's chain of activities (direct effects);
- Secondly, the petroleum industry can improve local systems of the import and export (supply) of petroleum products (transportation, distribution, and marketing), which also can improve and create massive employment (indirect effect); and
- Thirdly, the whole petroleum industry's (upstream, midstream, and downstream) activity improvement and development could influence different reliant organisations or business development, which probably will have to improve the quality of their products or services and possibly create new employment. Therefore, direct, and indirect employees will spend their wages in supporting small business development (induced effects).

However, in light of the aforementioned, petroleum industry performance and development could offer positive socio-economic opportunities to the country. The multiplier effects could finally generate a very reputed, strong, dynamic, and integrated petroleum industry, which can produce or contribute to economic growth and social transformation. Burke (2014: 234) also emphasised that the intervention for capacity development programmes can help on the task requirements and individual skills/abilities development, which can significantly influence individual motivation and productivity. Therefore, change in individual needs and values change involve congruence between what the individual organisational employee believes is

important, worthwhile, and valuable and what the organisation stands for, such as its purpose, values and how people in and out of the organisation (customers for example) are treated. Moreover, it is necessary to point out that individual and organisational performance and development are the ultimate aim for any organisation that invests in employees' capacity development. Therefore, according to Burke (2014: 234), organisational performance needs to be measured and seen through certain indices such as productivity; customer satisfaction; quality of products or services; and profit or earnings per share. Yet, changing transactional factors is more likely to result in organisational continuous improvement (incremental and evolutionary change) and socio-economic transformation. Accordingly, transformational, and transactional factors are the elements that link capacity development interventions to organisational change in such a way that the direct, indirect, and induced effects of capacity development interventions can result in organisational performance, development, and sustainability, as well as on socio-economic transformation process in the country.

2.3.2.2 Perspectives on capacity development interventions for organisational vision improvement, achievement, and sustainability

In any organisation, managers or leadership must have a clear vision of the future and capacity to translate vision into reality. According to Burke (2014: 230), organisational vision addresses the future, concerns, aspirations, and desired outcomes. Therefore, the vision of an organisation refers to the dream that it has for its future. This means that the vision stands as the roadmap of what the organisation's future make up will be, what it is trying to do and to become, the direction it is headed and the capabilities it plans to develop. It reflects the passion that organisational members feel or want to achieve, especially leaders. Therefore, the vision of the organisation is the vital goal or reason for the existence of that organisation.

Furthermore, vision indicates challenge and a stretch for the organisation over the next three to five years. In light of the aforementioned, capacity development interventions' purpose is to "PUSH" the organisational vision to become more realistic to achieve the goals and objectives defined, through a process of improving and increasing employees' skills development. The requirement for organisational vision, mission and objectives improvement, achievement and sustainability is to "PULL" capacity

development interventions through. Chapter Seven, which emphasises on the model or approach suggested by the researcher to tackling technical skills shortages is also focussing in addressing and describing the PUSH and PULL strategies, which are necessary techniques or tools to be used in closing the gap of skills shortages. These techniques suggest that an organisation's success, performance, productivity, and development depend largely on the effective implementation of capacity development programmes and on the appropriate utilisation of existing qualified/skilled employees, based on the types of interventions required. However, capacity development interventions implicate special training/learning activities linking capacity development programmes providers to employees and organisational management to improve/develop the skills of employees and possibly stimulate organisational performance, productivity, growth, and expansion.

Nevertheless, the objective of capacity development interventions within the organisation is to ensure higher expectations for vision, mission and objectives improvement, achievement, and sustainability. Therefore, employees' skills development can play a dynamic role to advance service effectiveness, create opportunities to change the nature of activities and improve the organisational image or reputation. In addition, capacity development interventions can be considered as a significant tool that may possibly prevent organisational vision, mission, and objectives to be unsuccessful and as an approach that is forecasting organisational and socio-economic future development, without it nothing can succeed. In light of the aforementioned, Meyer (2004: 223) defined the vision as the goal that change must achieve.

This suggests that the vision must specify the ultimate objective of change within the organisation and that the objective must be inspiring as well as realistic. This also implies that the vision can address a solution to current problems such as skills shortages, justifying the change by demonstrating the weakness of the current situation and the advantages, which change, can bring. It is also important to admit that organisational vision for performance and development need to be aligned to the national development plan, which promotes organisational and socio-economic transformation (creating more opportunities for jobs, inequalities and poverty reduction, educational and health system improvement and development, and other

different aspects of the country). However, the vision on its own cannot create change as capacity development interventions can create change in addressing the organisational vision. Therefore, the vision of capacity development interventions for organisational development is to address a planned change of the organisational work, to enhance individual capacity development and improve organisational performance or productivity through the alteration of organisational members on-the-job behaviours. According to Meyer (2004: 81), vision represents organisational modernising and dynamically applying unique draw out solutions. This suggests that the vision can be a strategic view, interpretation and understanding of the organisation, its products and its processes that aims to create and satisfy demands for products and services in such a way that external people's (public, customers or consumers) satisfaction is increased and organisational profits soar.

Furthermore, the vision represents the view of the organisation, and looks forward, not by projecting or placing the current activities into the future, but by identifying the skills, resources, and processes that the organisation must develop to be successful in the future. Therefore, capacity development programmes as an integrated part of the organisational vision to improving human capacity (managers and workers' capacity development) can contribute to achieving and sustaining the organisational planned vision, which is the ultimate goal and reason for the existence of the organisation. However, an organisation without a clear vision for human capacity development or an organisation that lacks capacity development programmes interventions could probably experience failure or poor performance and consequently, that organisation will fail to sustain its growth and fail to contribute to the country's socio-economic transformation.

Regarding this concern, employees and managers with unimproved capacities could negatively affect organisational productivity, innovation, and creativity. In other words, people without the skills to adapt themselves to the speed of technological innovation will find themselves left out, unproductive and ineffective. Furthermore, a workforce with low skills and unimproved capacities cannot achieve the forecasted/predicted vision of the organisation. On the contrary, improving the skills or capacities of the workforce can effectively drive the achievement process of the organisational vision, as well as bridge the vision and objectives targeted.

In light of the aforementioned, it can be stated that the vision can be a clear definition of organisational targets, while capacity development interventions can be the engine or locomotive that empowers the workforce to influence vision and mission achievement. According to Meyer (2004: 247 - 249), the following sub-points indicate the purpose for which an organisation should incorporate the skills development programmes in its vision:

- **An organisational vision promoting change**

Contemporary skills development in the workplace has become a way of life for modern organisations. Pressure from increased competition, globalisation and other environmental forces has created a business world that rewards organisations that are capable of learning from trends and responding appropriately to them (Meyer, 2004: 247). The business environment is presently characterised by perpetual uncertainty, rapid change and the continuous pursuit of competitiveness and excellence. However, organisations that are ready to use capacity development programmes as tools to adapt themselves to situations of rapid change and the continuous pursuit of competitiveness and excellence are the ones that could survive and prosper. Organisations that are capable of learning are also able of changing, innovating, and providing the creative thrust which if properly motivated can ensure the long-term survival of the business (Hossain and Roy, 2016: 1021).

These organisations are “learning organisations” with a vision of constantly boosting the workforce with new skills through skills training programmes. On the contrary, an organisation that is not ready or slow to use capacity development programmes, as a tool to scan the environment and adapt to changes in technology, systems and techniques will not survive the information and knowledge era. According to Zino (2014: 9), a learning organisation is the one that stimulates both individual and team learning to foster sustainable development, continual organisational regeneration, and renewal, and create processes, which increase partiality for more learning, change and adaptation in a rapidly changing environment. A learning organisation creates, improve, or innovate capacities for several reasons. According to Zino, (2014: 9), in most cases learning organisation support:

- Employees to consistently improve their capacity to achieve their desired results,
- Employees to develop creative and innovative thinking,
- Employees to engage in learning activities consciously and consistently,
- Employees to collectively learn and see the bigger picture rather than have an isolated vision.

In addition, in learning organisations, perspectives include quantifiable improvement of socio-economic activities, increased capacity/knowledge/skills/abilities for decision making and competitive advantages (Jennex, 2019: 6). Therefore, an organisation that uses or incorporates capacity development programmes in its vision is a learning organisation, which not only learns from the environment, but also actively encourages workforce learning within the work environment. The learning environment encompasses the culture of the organisation and learning organisations constitute a new approach to learning and workplace performance, which requires a new way of managing organisations (Meyer, 2004: 248). In light of the aforementioned, capacity development programmes cannot only promote change, improvement and development within the organisation through workplace education, training and development interventions, but also encompasses a fundamentally new way of managing people, processes and systems in the modern organisation.

According to Meyer (2004: 248), a change in organisational capacity (culture) is therefore needed to influence the change from a traditional organisation to a modern learning organisation. Consequently, capacity development becomes an integrated system of organisational processes, which promote new and innovative ways of learning and managing performance improvement. Therefore, learning in the workplace becomes part of a continuous process of information/knowledge/experience sharing, exchange and dissemination with the workforce and the environment.

- **Moving from the traditional vision**

According to Meyer (2004: 248), the organisation's vision is required to integrate and shift to capacity development programmes interventions to address the low performance of organisational productivity. The new approach to capacity development programmes transcends the scope and impact of traditional training. It encompasses organisational learning at all levels, in all departments and by all workforces. This shift to capacity development intervention focusses on the need for improved business performance in the fast-changing business environment. However, capacity development programmes usage in any organisation, including the South African petroleum industry, could possibly create significant changes. Table 2.9 illustrates better understanding on the shift from traditional organisation to learning organisation (Zino, 2014: 10).

Table 2.9 Shift from traditional organisation to learning organisation

Dimension	Traditional organisations	Learning organisations
Organisational direction	The Top managers only dictate the vision.	Vision is usually shared across all organisational levels and the major aim of managers consist of ensuring the existence of a vision
Idea/ Vision formulation	Only the Top managers are decision-makers of what to be done. The members of the organisation are simply actors.	Forming and implementing innovative ideas is done in all levels of the organisation.
Thinking perspective	There is no systematic thinking and sense of ownership, employees in the workplace think from isolated point of view. They are led by the requirement to complete their task.	Systemic thinking: Employees in learning organisation think from a systemic perspective. They include the bigger picture on how their actions can influence the organisation as a whole.
Group learning /communication	Traditional organisations are based on hierarchical approach. There is inflexible communication system. Only a traditional Top-Down communication system is sustained.	Communication system is flexible involving vertical and horizontal as well as Top-Bottom and Bottom-Top communication system. Group learning and discussions are stimulated in facilitating building,

		developing, and achieving shared vision.
Leadership and motivation	Leadership role remains stagnant or inflexible in terms of presenting insight, reward and punishment and supervision.	Leadership generally adopts or plays and fulfils three major roles, which include planning/designing, teaching, and serving. In addition, the main aim of the leadership consists of creating shared vision, inspiring, and encouraging personal mastery, and unifies mental models of people in the workplace.

Source: Adapted from Zino (2014: 10)

Table 2.9 suggests a move from traditional system to new systems, processes, procedures, methods, and techniques that are flexible in the quest for continuous improvement and increased productivity. Therefore, Meyer (2004: 248-249) indicated that the possible changes that can happen within the organisation due to capacity development programmes interventions are those which shift an organisation or business from traditional ways of doing things to a modern environment. Table 2.10 illustrates the possible shift effects or changes that capacity development programmes interventions could foster from the traditional environmental vision to the modern environmental vision.

Table 2.10 Shift effects of capacity development programmes on organisational vision from the traditional environment to modern environment

Business area	Traditional environment	Modern environment
Technology	Technology is used as means to support business.	Business is driven by technology.
Customers and markets	Customers come from a particular region or country.	Globalisation transcends regional and national boundaries.
Economy	Economy is driven by production factors.	Economy is driven by information, knowledge, and technology.
Business functions		

	Functions are organised around specialised departments, e.g. production, finance.	Department boundaries erode as businesses (organisations) become more process-oriented; multi-skilling.
Managerial roles	Managers' plan, organise, motivate, and control.	Managers facilitate organisational processes.
Employment	Most employees are employed on a full-time basis.	Most employees are employed on a part-time contract basis.
Performance management	Managers evaluate the performance of employees from a top-down perspective.	Multi-rated performance management is used where managers, employees, suppliers, and customers evaluate each other's performance.
Work practices	Rigid working hours, practices and people work at a particular location.	Flexible working hours and practices, people work from home or different locations.
Training	Training occurs in a classroom and is done by an instructor.	Training is done through technological-based learning systems, such as multimedia and e learning.
Administration	Administrative systems are manually maintained	Administrative systems are computerised
Information	Information technology specialists manage information systems.	All employees partake in the management of information and knowledge.
Strategic management	Easy to scan the environment and plan over the long-term.	Due to rapid changes, it is difficult to plan.
Competition	Hostile competition and isolated operations	Strategic collaborating reduces hostile competition.
Managerial authority	Management has the authority due to its knowledge base.	Employees have authority due to their knowledge base and access to the internet and market.

Source: Adapted from Meyer (2004: 248-249)

According to Ozigbo (2008: 53 – 54), technology is not necessarily hardware, but is the entirety of knowledge and skills embodied in people and organisation/institutions, which provide them with mastery over their natural environment or natural resources. Table 2.10 displays the shift effects of capacity development programmes on the organisational vision from a traditional environment to a modern environment. This shows, for example, how technology can be used as means to support business transformation and improve functions, which are organised around specialised departments. Furthermore, technology can also involve the shift and transfer of skills

training that occurs in a classroom or in the workplace, which is done by an instructor, to a modern environment. The shift from a traditional to a modern environment may involve change where business is driven by technology; where departmental boundaries erode as organisations become more process-oriented and multi-skilling; and where skills training programmes are done through technology-based learning systems such as multimedia and e-learning. The role of capacity development in the context of shifting the business from a traditional to a modern environment is to harness capacities within the network of institutions and to enhance organisational interactions to better manage the process of technology (Ozigbo, 2008: 54). Therefore, a general policy environment that induces human and organisational interactions and collaboration is necessary for effective technology policy management and capacity development. However, according to Meyer (2004: 249), the reasons why organisations should shift to a modern environment and use capacity development programmes, as well as constantly develop the skills of employees are as follows:

- Capacity development interventions provide opportunities for productivity improvement;
- It offers opportunities to improve the quality of products and services;
- It presents opportunities for new knowledge and skills development;
- Capacity development interventions provide new methods and techniques to improve productivity;
- It facilitates the process of identifying best practices;
- Capacity development can lead to greater effectiveness and efficiency; and
- If well implemented or applied, capacity development programmes can contribute to employee morale improvement and well-being, as well as to organisational performance.

In addition, Zino (2014: 8) indicated that shift from traditional organisation to modern or learning organisation could promote:

- **System thinking:** This discipline develops people ability to analyse interactions and interrelationship between systems and its different parts. System thinking tolerates interactions, interdependency, and flexibility (change) within the system (Zino, 2014: 8). Employees/teams are encouraged to learn how to deal more effectively with the forces that form the consequences of people actions. System thinking promotes the need for a paradigm shift from isolated system to interconnected system and stimulates unity and integration of others. It creates a systematic body people with ability to analyse environmental changes, challenges, events, situations/courses and causes of actions to identify the best solutions from existing critical problem (e.g. technical skills shortages, skills waste and deficit of positive human capital capacity in the petroleum industry).
- **Personal mastery:** This discipline pushes people in the workplace to an awareness of the need for personal lifetime continuous learning. Zino (2014: 8) emphasised that personal mastery is a discipline that involve becoming a better employee through the need for being realistic, persistent and focus in achieving organisational and individual visions. Therefore, organisations are required to promote and encourage dedicated learning people in the workplace and stimulate self-awareness to learning activities, which transcend skills or competences development, knowledge growth and opening.
- **Mental models:** According to Zino (2014: 8), mental models involve a combination of assumptions, deep-rooted belief, and picture/image, which can influence and dictate the thought process and actions of an employee in the workplace. This discipline comprises the act of participating in meaningful learning conversations in the workplace where employees can interact and divulgate their thinking perspective to influence other individuals within the organisation. Zino (2014: 8) stated that developing individual learning ability could bring about real change. In addition, self-discipline is a requirement for one to change his mental model. Zino (2014: 8) denoted that if organisations

have to develop a mental model, there will be necessity for employees to learn to adopt new orientations that consist of boosting openness, knowledge development, specialisation (division of labour) and dismissing internal politics.

- **Developing shared visions:** This discipline involves establishing a particular shared vision within an organisation. Employees are required learning the way to be committed to organisation or groups where there is a jointly supported vision. In an organisation where there is a genuine vision, employees attempt to achieve organisational vision willingly (Zino, 2014: 8). Organisational vision must involve or relate on individuals, given that employees in the workplace have personal visions, which may be incompatible with organisational vision. Therefore, leaders could make mistakes of not translating their personal vision to shared organisational learning. People' visions can spread through a process of reinforcement. In most cases, wherever employees frequently debate or discuss a vision there is clarity; and clarity of vision creates opportunity for enthusiasm to commit to the vision (Zino, 2014: 8). The main problem to solve when developing/building a shared vision is about to know: "what do people/employees seek to create in a team?" The question must be discussed earlier within members of the team so that they can appreciate or apprehend the vision that the leader seeks to create.

- **Team Learning:** Team learning is a discipline that includes the process of developing/building and improving team capacity to achieve common shared vision. The process of developing and improving team capacity begins as soon as teams start thinking together on how to share previous acquire skills, knowledge, and experiences. This way of sharing experiences may assist team members to improve learning ability and develop or build analytical, reflective, argument and investigative skills (Zino, 2014: 9). In addition, sharing knowledge consists of team exchanging of ideas, communication, and information flow vertically. Team learning discipline develops/builds together personal mastery and shared vision; it addresses the need for teamwork or collaboration. Zino (2008: 9) postured that team learning can be seen as a synergetic or symbiotic link between employees and organisation, given that organisation achieves its organisational goal through the abilities/skills/capacities of employees, although employees can grow and develop their capacities/abilities/skills

through tasks/functions/ responsibilities fulfilled in the workplace. Thus, interchanged discussion, exchanged ideas, conversation between employees, communication and information flow are very important to create a common vision across a team (Zino, 204: 9).

In light of the aforementioned, the opportunities that capacity development interventions can create within an organisation demonstrate that employees' skills development is fundamental for successful organisational vision, mission and objectives. Such as stated earlier, according to Ozigbo (2008: 54), capacity development encompasses a country's human, scientific, technological, organisational, and institutional and resource capacities. This implies that capacity development is the process by which individuals (employees), organisations and societies develop abilities to perform functions, solve problems, set, and achieve goals. Furthermore, Ozigbo (2008: 54) added that capacity development for an organisation refers to its ability to achieve its mission effectively and sustain itself over the long period.

However, the necessity for capacity development interventions is for organisational development and socio-economic transformation that needs to take place at all levels of the institutional and organisational environment. This suggests that an important operational shift will have to take place in the thinking capacity and behaviour of individuals within an organisation. This in turn necessitates effective and sustainable skills training programmes that improve an organisation's ability to achieve its mission or employees' ability to define and realise their goals or to do their jobs more effectively. Table 2.11 describes the way to shift or to bridge the gap between an organisation without the vision of capacity development interventions and the one that tends to incorporate in its vision the practice of capacity development programmes.

Table 2.11 Bridging the gap between an organisation without the vision of capacity development interventions and that tends to incorporate capacity development programmes

Capacity development interventions focus area	Organisation without capacity development interventions vision	Organisation with capacity development interventions vision
Needs identification	Lacks/low, reactive training needs identification and wait for problems to occur.	Forecasts reactive and proactive training needs identification.
Training skills design	Instructional designers do design.	A project team is used, consisting of various role-players.
Evaluation	Trainers evaluate skills training.	The whole organisation evaluates skills training.
Responsibility	Training skills is the responsibility of the training manager and sometimes the line manager.	All employees and managers are responsible for learning and training skills.
Technology	Very little technology is used; mostly classroom training skills.	Electronic learning is used to optimise both technology and training skills
Performance focus	Giving skills to employees so that they will achieve a specified level of competence	Improve performance by empowering workers to learn continuously.
Location	Separation between the learning environment (classroom) and the work environment	Learning and work environment are fully integrated.
Duration	Training skills is an event (course) with a clear beginning and end.	Learning or training skills is a continuous process.
Access	Learning is restricted to individual and managers who require skills in a particular area.	All employees and managers have equal access to a wide range of learning opportunities.
Learning culture	The organisation teaches employees that they should know how to fit into the organisation.	Employees teach the organisation about efficiency, innovation, and improvements.
People skills	Interpersonal skills training is restricted to people in soft position, such as HR, IR and PR.	All employees and managers get interpersonal skills and emotional intelligence training.
Mistakes	When mistakes are made, they are kept hidden to protect people.	Mistakes are seen as learning opportunities and disseminated to the whole organisation
Selection	Managers select the courses they think employees need.	Employees are trusted to select the courses they need.
Target populations	Management and employees attend separate skills training programmes.	Managers and employees often attend skills training programmes together.
Learning area	Skills training focus on job-specific aspects.	Cross-functional skills training programmes are encouraged so that people learn about the whole business.

Relationships	Self-interest is the foundation of relationships within the organisation.	Co-operation is the foundation of relationships within the organisation.
Training investment	It is difficult to acquire the necessary resources for training programmes.	There is a high investment in skills training programmes and resources for learning.
Information	Information is the prerogative of management.	Employees have access to information.
Decision-making	Management makes decisions.	Employees are empowered to make decisions.
Communication	Communication is only used as an information tool, to acquire information and give feedback.	Communication is used as a learning tool.
Organisation structure	The hierarchy emphasises position and functionalism	Systems approach encourages interdepartmental co-operation.
Control	Managerial control is used.	Self-control is seen as the best form of control.
Learning units	Focus on individualism, especially for star performers.	Teamwork and individual learning are combined.
Assessment	Assess employee performance.	Assess employees' learning progress.
Approach	Formal trainer-trainee approach.	Informal facilitator-learner relationship where both parties learn from each other.
Rewards	No rewards for increased employee value	Rewards for expanded knowledge and skills
Learning plans	No written learning and action plans.	Written learning and action plans for each employee.
Partnerships	Very few partnerships	Active partnerships between customers, suppliers, employees, and management
External focus	No study of other companies; more internally focussed.	Use excellent companies as benchmarks to improve performance; globalisation.

Source: Adapted from Mayer (2004: 250-251)

Table 2.11 clearly shows that capacity development interventions can bridge the gap between an organisation without the vision of capacity development interventions and the one with a vision to practice capacity development programmes. An organisation with capacity development programmes can incorporate excellent skills training programmes for change and transformation. Therefore, skills training programmes can become the organisational culture and yield maximum impact related to the improvement of workforce capacities/skills. However, if this is not being the case, then the lack of skills training programmes may possibly yield minimum impact despite dedicated efforts by management and staff in attempting to improve organisational capacities (efforts for change, performance and productivity are related to employees' capacity development).

Organisational change and transformation can be possible if capacity development programmes become an integrated part of the vision of the organisation. Therefore, according to Ozigbo (2008: 54), the shift to capacity development programmes and to modern practice of knowledge/skills acquisition could relate to any aspect of work, which includes:

- Improved governance of the petroleum industry;
- Leadership;
- Mission and strategy;
- Administration (including human resources, financial management, marketing, positioning and legal matters); and
- Individual capacity improvement and development (capacity development relate to leadership development, advocacy skills, training/speaking abilities, technical skills, and other areas of personal and professional development). Country capacity development involves a long-term continuing process in which all stakeholders participate. This represents a choice of the potentials of a country in a specific or in all areas of socio-economic, political, cultural, and educational spheres of life.

However, Ozigbo (2008: 54) indicated that capacity development is much more than training and involves:

- *Human resources development*: the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively.
- *Organisational development*: the elaboration of management structures, processes, and procedures within not only organisations but also the management of relationships between the different organisations and socio-economic sectors.

- *Institutional and legal framework development*: making legal and regulatory changes to enable organisations, institutions, and agencies at all levels and in all socio-economic sectors to enhance their capacities.

Thus, in the light of the aforementioned and according to Meyer (2004: 256), for the successful integration and implementation of capacity development intervention tools in the organisational vision, a number of barriers or obstacles to the skills development of the workforce will have to be uprooted. This includes, for example, management or workforce resistance to change or resistance to capacity development programmes interventions when an organisation attempts to facilitate skills training programmes groups within the organisation. For specific reasons, certain workers or managers can create barriers and block opportunities for lower qualified workers or even some skilled workers to improve their skills level or they simply block the initiative and ability to learn. Therefore, in facilitating the usage of capacity development interventions, any government will have to be involved in the process, making capacity development programmes one of the key plans for achieving government targets, organisational mission, and objectives, through (Ozigbo, 2008: 54):

- Training employees in targeted areas of competency and the acquisition of technological and managerial capability;
- The development of infrastructure and upgrade of facilities;
- Identifying new opportunities for local suppliers; and
- Local business and local suppliers' enhancement.

Furthermore, barriers to capacity development programmes or to skills training programmes within an organisation (at the workplace) could make it difficult for an organisation to transform its culture to become a learning organisation and effectively achieving its vision, mission, goals, and objectives. Failing to improve the ability to develop capacities, sustain the process and ensure the effective utilisation of organisational resources, the petroleum industry in any country, including South Africa, might not be able to achieve a certain degree of competitiveness and the

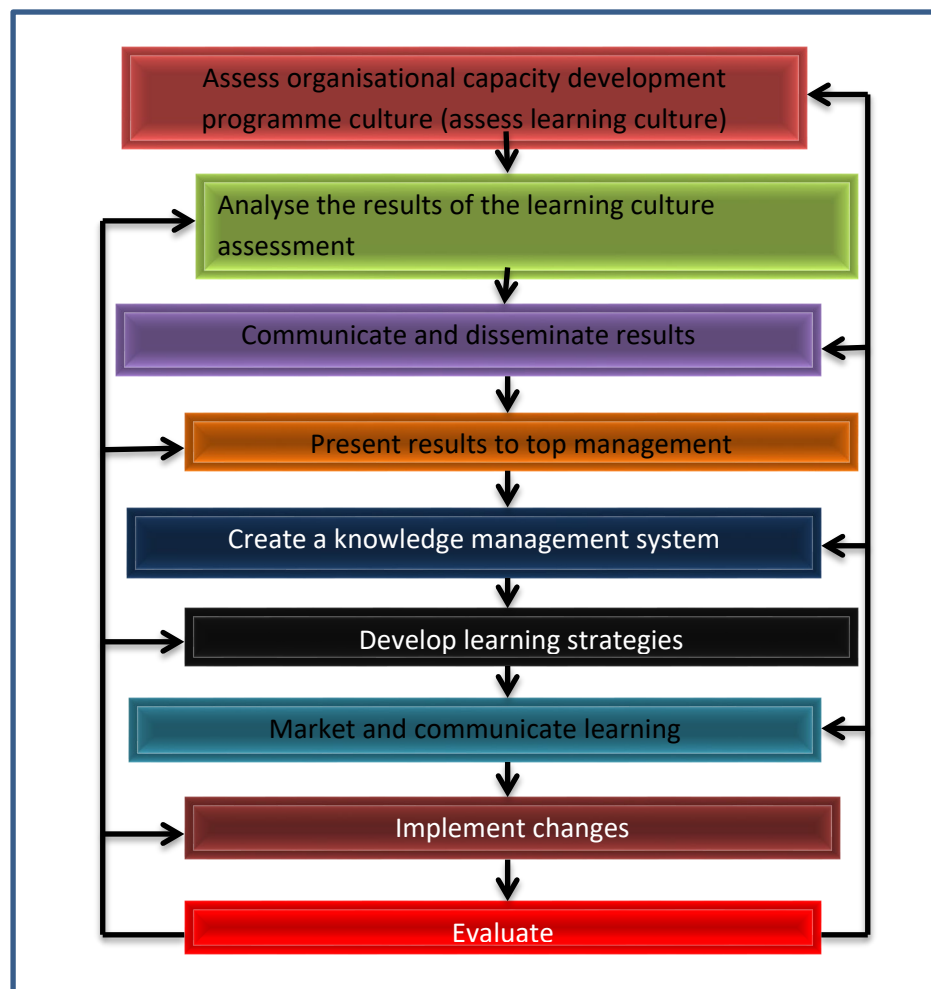
desired integration level into the global oil sector. Therefore, the low or under-utilisation of existing capacity and/or low skilled personnel could make the petroleum industry remain in the same situation (under-developed or the persistence of skills shortages) and obstruct the socio-economic growth and transformation process. In terms of the aforementioned and according to Meyer (2004: 256), barriers to capacity development interventions may include the following:

- Bureaucracy and hierarchical management structures;
- Rigid rules and procedures which govern who will and will not qualify for skills training programmes;
- Limited resources due to ineffective prioritisation;
- An organisational culture that does not value creativity and innovation;
- Management expectations for employees to conform to the prevailing culture;
- Lip-service to employee empowerment and teamwork;
- Limited-interdepartmental co-operation;
- Management control of workers, rather than support of them;
- Managerial sanction which instils fear in workers if mistakes are made; and
- No support and encouragement for skills transfer and application.

From the view of these barriers, it can be understood that no matter how management could multiply efforts to create an environment that sustains the organisational vision, if the barriers indicated above are not uprooted, the organisation will not be able to transform itself into a performing organisation. On the contrary, organisations with a performance and development vision will have to consider existing situations, conditions, or environments as an opportunity to undertake new strategies that can

facilitate capacity development interventions and promote employees' capacity development. Figure 2.7 characterises a model which can help to understand the process that a learning organisation could undertake to integrate capacity development interventions. If so, the possible socio-economic effects of that integration process can be viewed in Figure 2.8 further below.

Figure 2.7 Process for capacity development interventions in a learning organisation



Source: Adapted from Meyer (2004: 257)

According to Meyer (2004: 257-260), this process shows how a learning organisation can use capacity development programmes as a tool to support workforce performance, organisational development, and socio-economic transformation. Sharma (2018: 240) stated that the process for capacity development interventions in a learning organisation may include an understanding of two specific terms, namely skills training and skills development.

Therefore, it is indicated that *skills training* typically focuses on providing employees with specific skills or helping them to correct deficiencies in their performance, while *skills development* aims at long-term development, focusing on developing the capabilities of current and future employees (Sharma, 2018:240-241). Furthermore, it is emphasised that the process for skills training focuses solely on current jobs and that the scope of skills training is the individual employee, with the goal being to fix current skills deficit. While the process for skills development focuses on both current and future jobs, the period of skills training should be immediate and that of skills development should be for the long term because it involves the work of groups or organisations. In addition, in the case of the skills development process, the goal is to prepare and get ready for future work demands (Sharma, 2018: 241). However, the possible effects of the process of skills training and skills development in the petroleum industry can vary.

As viewed in Figure 2.7, the process can help understand how to implement changes and evaluate/identify opportunities, which may be profitable to organisational performance, growth, development, and sustainability; and also, to evaluate/identify possible environmental threats that could cause the failure of any process of organisational change or development. Furthermore, according to the OECD (2011:1), the capacity development interventions process in a learning organisation, as described further below is indispensable for two types of changes that an organisation can envisage or expect to achieve. These involve subjective and objective change.

Subjective changes are related to ideas, values, behaviours and the structural approach to the reality and challenges faced by employees. Moreover, subjective change applies to the definition and implementation of policies that can change people's mentality regarding positive behaviour to work conditions or to entrepreneurship. This behaviour towards business risk depends on both the funds and skill resources provided by the organisation/system, but it also depends on the predominant cultural values (OECD, 2011: 2). The goal of subjective changes is to encourage employees to become more innovative and create more opportunities for themselves and for others in terms of employment confidence and creation. Policies to change mentalities regarding the role of the workforce in the organisation are also needed to be improved.

Therefore, ambitious changes have to be well-defined in this sense because they can be one of the main vectors of socio-economic transformation in the South African economy. In attempting to normalise the role of employees in the organisation, changes must be applied in all spheres of the organisation taking into account the business environment.

Objective changes involve reforms to the established structure of the organisation. In trying to improve efficient capacity development interventions in any organisation, the organisation itself should be involved in the definition of the content of skills training programmes, the financing of the training programmes and the promotion of internships and stages in organisational business (OECD, 2011: 1-2). The socio-economic benefits of capacity development interventions, whether from subjective changes or objectives change, are that a learning organisation could encourage or develop the culture of entrepreneurship and upgrade the quality of education amongst employees, as well as develop initiative for collective or individual research.

This is done in the intention to exchange knowledge, skills and best-practises in each field or promote the mentorship and coaching of employees to be able to transfer successful experience to new recruits or the new potential workforce that may join the organisation in the future (OECD, 2011: 2). It will be useful to establish such programmes (skills training or skills development interventions), not only in the petroleum industry but also in different sectors of the economy. Therefore, policies and programmes for skills training and skills development should increase the awareness and improve co-operation amongst all actors and decision-makers, both at private and public levels. This, all actors concerned, public and private, could play an efficient role and produce knowledge about experiences and best practice for capacity development interventions on a more effective and permanent basis. Thus, the process for capacity development interventions in a learning organisation involves the following:

- **Assessing the capacity development interventions culture within an organisation**

Assessing the learning culture within an organisation involve the identification of required skills development (skills training programmes) by taking into account three levels of learning capacities, namely individual capacity, team capacity and organisational capacity (Meyer, 2004: 257). Once the learning culture or required skills to be developed are identified, then results can be analysed in relation to possible appropriate training programmes that meet organisational aims and objectives for change.

- **Analyse the results of the learning culture assessment**

According to Meyer (2004: 257), the results, once clarified, can indicate the prevalent requirements, or needs for capacity development interventions where the major problem areas could be discovered. For example, results may indicate that the area in which capacity development intervention is needed is the lack of policy improvement in terms of facilitating the management of human skills development and performance to increase organisational productivity.

Additionally, results may also show that policies are not relevant to the vision and strategies of the organisation in promoting workforce capacities and are not facilitating the usage of capacity development programme interventions within the organisation. Therefore, the results from the assessment will have to indicate the major issues related to policy and skills development, as well as point out suggestions and recommendations that may help to improve policies and strategies that can promote the skills development and performance of the workforce.

In light of the aforementioned, it is important to consider that the area of problems found determine correspondingly or specifically the area of capacity development intervention. According to Meyer (2004: 258), result must also indicate the consequences of the findings and help to create or improve the management of skills development (knowledge management system). For example, the lack of appropriate policies to promote capacity development programmes within an organisation and the lack of management awareness in terms of improving the workforce's skills can result in losing the workforce performance and its competitive advantage.

Towards supporting management commitment to the use of capacity development programmes as a tool for skills improvement and development, the organisation will have to develop a culture of learning, a culture of competitiveness and a culture of innovation. However, according to Meyer (2004: 258), the creation or improvement of skills/ knowledge management systems could involve technology, databases, systems, processes, procedures, documents, reports, and workforce expertise. Therefore, skills management is crucial to develop/improve a system in which the workforce can learn and develop the ability to use and share information with the right people at the right time and the right place.

Thus, the skills management system must ensure that new knowledge learned is managed to improve workforce performance and to increase organisational productivity. It must also ensure that skills are used effectively by promoting the participation of under-represented groups, improving the recognition, and matching of skills and increasing the value of employers and workers' place in skills (OECD, 2015: 3). Furthermore, socio-economic transformation requires more skills and the better use of skills. This implies that capitalising on the potential of skills development policies to promote inclusive socio-economic transformation requires concerted efforts to ensure that people at all ages and stages in their working lives must be able to develop and upgrade their skills, activate those skills, and utilise them effectively in the workplace across the economic sectors and societies (OECD, 2015: 3).

Working to gain a competitive advantage and to ensure progressive and effective skills development, Meyer (2004: 258) suggested components that need to be taken into account. These include generating new knowledge; accessing knowledge from the external environment/sources; representing knowledge in documents, databases, and software; embedding knowledge in processes, products, and services; transferring existing knowledge around the organisation; using accessible knowledge in problem-solving and decision-making; facilitating knowledge growth through the earning culture and incentives; and measuring the value of knowledge assets and the impact of management. Thus, the skills management system must ensure that capacity development interventions lead to performance improvement at all levels of the organisation and facilitate continuous processes of workforce skills development and sustainability (Meyer, 2004: 258 - 259).

This is very important because a well-developed skills management system within an organisation can facilitate an appropriate learning strategy for the workforce. According to the OECD (2015: 3), developing or facilitating an appropriate learning strategy means that a set of concrete actions need to be settled to boost skills and their use.

- **Communicate and disseminate results**

The communication and dissemination of results involves the process by which a written report must be addressed to the management/leadership and the whole organisation to provide suggestions and recommendations based on assessment outcomes. Therefore, the area of problems found, and the area of capacity development interventions will have to be specified in the report (Meyer, 2004: 25). However, a session of sharing information with the workforce is also essential to communicate the results/findings.

- **Presentation of results to the management/leadership**

The process of presenting the results to the top management is a crucial step that causes the leadership to be aware of the existing areas of problems, which necessitate responsible decisions to adopt the kind of interventions that must relate to the findings. For example, the results of the assessment may indicate a lack of appropriate policies to promote capacity development programmes in the organisation or the lack of management/leadership awareness in improving the skills of the workforce. Therefore, according to Meyer (2004: 258), a formal presentation of the components of the report will have to emphasis on the consequences of the findings. This is done by highlighting and explaining to the leadership that skills shortages (due to the lack of appropriate policies and the lack of awareness to improve the skills of the workforce) can result in the organisation losing its competitive advantage and/or performance. Therefore, the organisation is required to develop a culture of learning, a culture of competitiveness and of innovation by means of applying capacity development intervention tools.

- **Create the management of skills development or knowledge management system**

The usage of capacity development programmes in the organisation requires the creation of skills management systems or the improvement of the existing one. However, according to Meyer (2004: 258), a skills management system takes into account the development of a system in which the workforce can learn and development the ability to use and share information with the right people, at the right time and at the right place. Moreover, the role of a skills management system is to update, improve and develop or create a learning environment in which facilities/ opportunities like technology, databases, systems, processes, procedures, documents, reports, and workforce expertise are available to improve workforce knowledge and performance, to increase organisational productivity and to gain a competitive advantage. Furthermore, in using capacity development programmes within an organisation, Meyer (2004: 258-259) emphasised that the skills management system can play a major role in generating new knowledge.

This is done possibly through accessing knowledge from external sources; transferring existing knowledge around the organisation; using accessible knowledge in problem-solving and decision-making; facilitating knowledge growth through culture and incentives; and measuring the value of knowledge assets and the impact of management. Therefore, it can be stated that the skills management system best practice within an organisation is very important towards ensuring that capacity development programme usage leads to the improvement of performance and productivity at all levels of the organisation. In addition, the skills management system can facilitate the continuous and sustainability of workforce skills development; facilitate the process of capacity development interventions; and develop an appropriate learning strategy for the workforce. According to Meyer (2004: 258 – 259), essential best practices to boost skills and their use involve:

- **Developing learning strategies**

Commitment, engagement, or agreement from organisational leadership to create, develop or improve skills/knowledge must involve the full participation

and collaboration of all organisational members. Collaboration within the workforce is therefore significant in terms of setting strategies for capacity development programme best practice (Meyer, 2004: 259). Furthermore, the strategy may comprise specific mechanisms to ensure that skills training programmes or capacity development programmes within the organisation characterise the learning culture of the organisation. Once again, the learning culture and the strategy for successful capacity development interventions should always address the three levels of learning transformation, including individual learning, organisational learning, and team/group learning.

According to Meyer (2004: 259), the understanding of each level can be specified as follows:

- *Individual learning strategies:* Capacity development interventions are needed to ensure that each individual is skilled to contribute to developing the organisation, working to add value to the learning organisation and to individual/organisational performance and productivity.
- *Team/group learning strategies:* Capacity development interventions are needed to ensure that teams/groups typify or represent the characteristics of the learning organisation, optimise the contribution of individuals, and implement organisational improvement by accelerating organisational capacity improvement. Group learning could be significant in terms of working together on real problems, acting in the group as a team and learning while doing. This approach of learning while working can be called “action learning”.
- *Organisational learning strategies:* Capacity development interventions are needed to ensure that all members of the organisation are interested, ready and committed to skills training programmes, and learn to improve performance at all levels of the organisation. This form of capacity development interventions could help the organisation to establish benchmark networks that may promote an internal and external learning culture.

In light of the aforementioned, the OECD (2015: 3) emphasised that a set of actions to boost skills and their use is important for the following purposes:

- To reaffirm the importance of a well-functioning and well-resourced education and skills system for promoting strong and inclusive socio-economic transformation;
- To underscore the importance of policy coherence through a whole-of-leadership approach with full stakeholder engagement; and
- To identify actions that organisations could take to improve the contribution of skills to stronger and more inclusive socio-economic transformation.

Table 3.1 in Chapter Three describes a better understanding of actions or skills strategies (policy and indicators) necessary to boost skills and their use. It also highlights that at the micro-level, skills support improvements in productivity and spur innovation, boost earnings and enhance individual opportunities and well-being, support thriving communities and societies. Furthermore, skills significantly increase an individual's chance of being employed and, conditional on being in employment, increase a worker's chances of being in a stable, productive, and rewarding job. At the macro-level, the performance of any country depends to a large extent on the skills of their workforce. This suggests that the more workers are skilled; they tend to be more productive. Skills support organisations to introduce and disseminate productivity-enhancing technologies and new ways of working.

According to the OECD (2015: 5), skills therefore contribute to economic growth, both directly through increases in productivity, and indirectly by spurring innovation. Additionally, skills support high levels of employment in good quality jobs. In light of the aforementioned, according to Meyer (2004: 259), the aim, objectives and benefits of skills training programmes or capacity development interventions should be clearly communicated to stakeholder to create an attractive interest amongst members of the organisation.

- **Marketing and communication of learning**

Guidelines to ensure successful communication differ from one organisation to another. In addition, a successful capacity development interventions strategy must be incorporated into the organisational vision and culture, where the responsibilities of all employees and managers to skills training programmes or capacity development interventions are specified (Meyer, 2004: 259). However, skills shortages persist in many organisations, not because they lack capacity development programmes, but because they lack or neglect to develop the skills management system and because they lack and neglect the mechanism to inform the workforce about the opportunities, they have towards improving and developing their capacities. Therefore, organisations are required to develop comprehensive marketing and communication strategies in campaigning about capacity development programmes to ensure that all learning strategies and programmes are settled to reach all employees within the organisation at all levels.

Meyer (2004: 259) also emphasised that all form of communication mechanisms/systems or methods should be used to inform and support the culture of learning and/or of capacity development interventions in the workplace. Therefore, one of the most significant objectives of campaigning about capacity development programmes/interventions is to propagate and disseminate the intention for possible skills training programmes and learning culture improvement or development. In addition, the strategies to inform organisations about a key strategy that can lead to organisational performance, productivity, and sustainable development. Thus, the benefits of marketing and communicating about learning consist of creating an environment where all members of the organisation will have to be aware or acquainted with capacity development programmes to create interest and excitement, buy-in and follow-through (Meyer, 2004: 59).

- **Implementation**

This crucial phase involves acting on or putting into practice capacity development programmes strategies or engaging the learning organisation into the practice of capacity development interventions tools. Therefore, the success of the capacity

development interventions strategy depends on the organisational vision and culture, where the responsibilities of all employees and managers in skills development or skills training programmes are well specified. According to Meyer (2004: 260), the successful implementation of capacity development programmes should be disseminated through the organisation towards sustaining or maintaining the learning culture and a high level of excitement about skills training programmes. On the contrary, failures should be seen as a learning experience that must be correctly studied, analysed, and improved. However, organisations should evaluate their skills development strategies and realise or discover their own path to transforming themselves into a learning organisation.

- **Evaluating the skills development strategies**

Vallejo (2015: 3) stated that capacity development interventions consist of deliberate actions undertaken to enhance, over time, the capacity of individuals, their organisations, and societies in an effort to foster their knowledge and skills base and strengthen their own existing competencies and capabilities. For that reason, the core objective of capacity development involves targeting knowledge, skills, and capacity in a broad sense. According to Vallejo (2015: 3), in principle, capacity development aims at solving problems and improving performance. Interventions are planned based on assumptions, behavioural change, development theories, and experience. Moreover, in practice, capacity development projects have pre-determined objectives and indicators of achievement to facilitate, at the end of the project, the evaluation of the result achieved by the interventions.

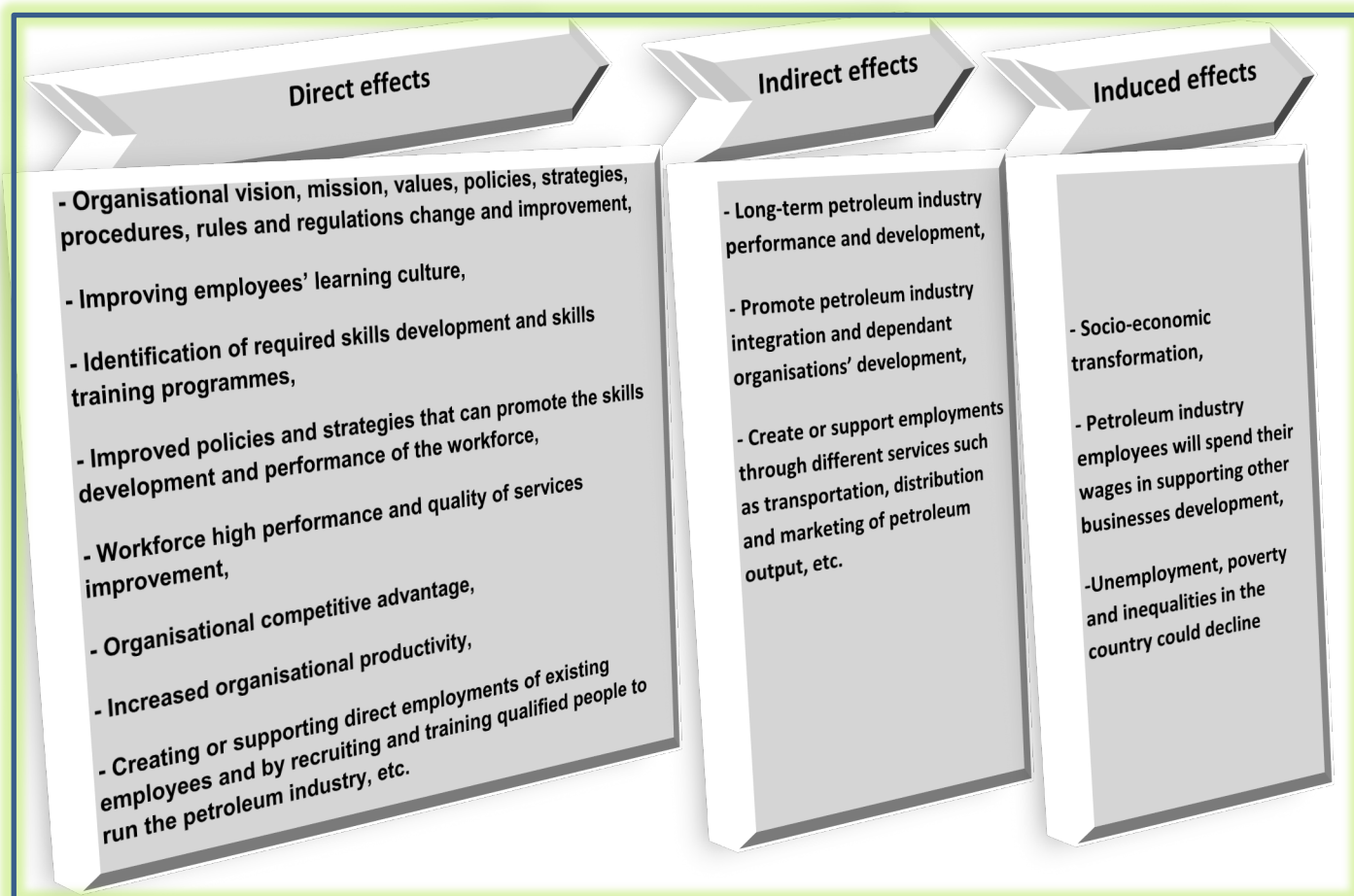
Vallejo (2015: 3) highlights the illustration of these indicators. These include the number of people trained, PhD or MSc/MA graduations, the number of educational curricula revised, the number of children completing primary education, and the reduction of maternal deaths during childbirth amongst those at individual levels; and new or changed policies, practices and working routines at the organisational level. However, intervention projects are evaluated based on pre-determined results using quantified and aggregated indicators, also known as results agenda, must include the emergency of non-planned changes that can occur due to, or parallel to, capacity development interventions (Vallejo, 2015: 2-4).

According to the OECD (2015: 5), there is increasing evidence that organisations and countries that lack the evaluation of interventions projects, are also failing to fully equip their workforce with the skills that are needed in an increasingly dynamic and inter-dependent economy and/or failing to make good use of the skills that people have. However, success or failure, performance or not, the evaluation of strategies, plans and programmes in using capacity development interventions is essential. The evaluation of strategies is crucial to ensure effective implementation and follow-up. Moreover, that the evaluation procedure should be built during the implementation process, based on pre-determined critical success criteria for each learning initiative (Meyer, 2004: 260). However, the evaluation mechanism needs to be frequently undertaken to prevent failure and stagnation, or to support the best practice of skills training programmes and maintain the excitement of the learning culture.

Additionally, the evaluation process of capacity development interventions should be linked to the measurement of overall organisational performance. Therefore, Meyer (2004: 260) indicated that it is possible to establish baseline measurements on the results from the initial administration of the learning culture assessment. In using that baseline, specific goals can be settled, and progress can be measured in subsequent assessments. Thus, according to the OECD (2015: 5), capitalising on the potential of skills development policies to promote individual well-being and socio-economic transformation requires concerted efforts by all stakeholders (organisations, national or local governments, individuals, employers, and unions). Efforts are needed to ensure that people at all ages and stages in their lives are able to develop relevant skills, activate those skills and utilise them effectively in the workplace and across economies and societies.

Thus, in light of the aforementioned, the evaluation of capacity development intervention is the most formal way to examine work and generate feedback, a way to account for the investments provided by projects funders and the efforts of relevant stakeholders. Lastly, evaluating capacity development interventions at the end is crucial to measure the potential socio-economic effects that capacity development interventions could generate in the country. Figure 2.8 illustrates the potential socio-economic effects that capacity development interventions in the petroleum industry could generate in the country.

Figure 2.8 Potential socio-economic effects capacity development interventions could generate in the petroleum industry and in the country



Source: Self-generated by the researcher

Capacity development under-utilisation or lack of capacity development sustainability in the petroleum industry or in any other sector of the economy could constitute a barrier to socio-economic transformation. Figure 2.8 indicates the mechanism of the direct, indirect and induced potential socio-economic effects that capacity development interventions could have in a learning organisation. The effects of capacity development interventions could include oil industry performance and development; dependent/reliant industrial expansion (such as agriculture and petrochemical industry development); and other socio-economic infrastructure development. Thus, the mechanism of improving and developing the petroleum industry could promote not only industrial/business expansion but could also create reliable socio-economic activities that may change community's lifestyles.

According to the OECD (2015: 3), skills development is crucial to promoting strong and inclusive growth. This implies that investing in skills development must be a key element of the petroleum industry and government's commitment to take action to support development and inclusive growth and help reduce inequality, unemployment, and poverty in the context of lifting GDP and inclusive growth. Furthermore, skills are a driver of innovation, the adaptation of new technologies and higher productivity, which combine to deliver strong and inclusive growth. In this regard, capacity development can be a social process that involves the co-operation amongst different actors, including government, educational institutions, private sector foundations and other entities (Ozigbo, 2008: 55). For organisational development and socio-economic transformation, all the above-mentioned actors have a critical role to play.

However, one of the most important actors is of course the government. Ozigbo (2008: 55) stated that capacity development issues, particularly through networking, should include governance, quality leadership, and management philosophy and resource allocation strategies. The author stated that capacity development through institutional networking should be grounded in an appraisal of the environment. This suggests that building adequate skills and adapting them over working lives can promote not only institutional/organisational success or prosperity but can also boost the earnings of individuals and enhance opportunities and wellbeing. Hence, effective organisational skills systems underpin thriving communities and societies. The OECD (2015: 3) emphasised that improvement in the relevance and quality of skills could provide an additional strong boost to long-run growth, resulting in substantial cumulative increases in living standards.

Nevertheless, it can be stated that socio-economic transformation is dependent on skills adaptation and utilisation as well as on productivity gains driven by innovation and knowledge-based capital. In South Africa, the government and the petroleum industry have the potential to mature, improve and sustain capacity development programmes. The awareness to enforce the right policy framework need to be put in place to promote both human and petroleum industry capacity development. In addition, promoting the necessary culture of co-operation amongst different communities of actors will require appropriate policies or legislation, financial investment, and monitoring standards.

Accordingly, working to achieve capacity development interventions objectives, organisations need to adopt and develop achievable policies and strategies; break down barriers to skills training programmes; constantly improve the learning culture of the organisation; analyse the root causes of performance problems; and subsequently design the intervention process that will create and sustain a learning organisation. Finally, it may be suggested that it is the responsibility of the organisation to consciously develop a mind-set shift consisting of facilitating capacity development programmes usage for any expected performance, development/change, and sustainability.

2.3.2.3 Perspectives on capacity development interventions for organisational mission improvement, achievement, and sustainability

According to Burke (2014: 230), the mission concerns what the organisation is all about its purpose, its reason for existence and its primary goals. The mission of the organisation tends to focus on the question: what business are we in and what do we want to achieve? After the vision is drawn up and has been decided on. Therefore, the mission improvement, achievement and sustainability depend on the type of business (What is our business and what are we trying to accomplish on behalf of our customers?). In addition, the mission is current/present and concerns the ultimate purpose. Thus, it is tied directly to the core competencies of the organisation. Moreover, the mission of the organisation characterises a written declaration clearly formulated to express the goal and objectives that an organisation envisages to achieve.

The mission of capacity development for organisational change/development can be of developing new ideas and creative organisational solutions, as well as developing organisational self-renewal capacity. According to Meyer (2004: 81), the organisational mission involves the application of services and solutions for the continuous improvement of organisational operations. Furthermore, it should include what the organisation is, what the organisation does, for whom the organisation is doing it, how it is doing it and why it is doing it. The mission statement of the organisation should also be understood by all employees, easily remembered, constantly challenging, really owned by the organisation, acceptable to all, feasible to

implement, prepare the organisation for the future and must be continually revised and improved. However, an organisational/institutional mission represents a general plan of the aims of the organisation, which is usually a document drawn up after the vision has been decided upon. The mission of an organisation includes elements from its internal and external environments. The mission statement is often written by the founder/s of the organisation and developed/re-written at a later stage after participation/input from all management and employees. Therefore, capacity development programmes can serve as a power-generating tool that can increase and improve managerial and workers' capacities to contribute and continually re-write and upgrade the organisational mission in relation to environmental change.

Nevertheless, the components of the organisational mission, which require workforce skills development, include the description of the organisation/institution; the description of customers that it serves; the description of the needs of the customers; the method of satisfying the needs of the customers; the circumstances under which the needs are satisfied; and the values of the organisation (Meyer, 2004: 81-82). This implies that the improvement of the organisational mission statement depends considerably on the skills of both the workforce and management. In addition, the skills of the workforce are essential in binding and co-ordinating all functions of the organisation and in helping or building the values, culture, and image/reputation of the organisation (Meyer, 2004: 81-82).

2.3.2.4 Perspectives on capacity development interventions for organisational values improvement, achievement, and sustainability

According to Anderson (2015:41), values are significant for organisational development because they are the underlying beliefs that are enduring and broader than any single consulting engagement or intervention. Further, values are important to organisational development because they include guiding choices about how to proceed in a given direction and tend to specify guiding principles rather than exact behaviour. Furthermore, values provide a larger vision that extends beyond any individual intervention. Values improvement by the effect of capacity development interventions can help in developing better working conditions in more humanistic environments. Yet, failing to take organisational values into consideration during the

capacity development interventions process could result in neglecting the best ways to manage people and minimizing the potential direct, indirect, and induced effects that any organisation could have. Figure 2.4 and 2.8 above and Figure 2.10 further below describes and provides clarification in relation to the effects of capacity development interventions within an organisation and in the national socio-economic transformation process. Furthermore, Anderson (2015:42) emphasised that values improvement in the organisation can contribute to better work from which the capacity development interventions process needs to ensure that growth, development, and learning are a key value for organisational productivity, competitiveness, and change. Moreover, capacity development can contribute to organisational values improvement through the process of organisational self-renewal capacity and the desirability of creating self-renewing learning capacity.

This involves considering employees' views as essentially good; confirming them as human being; seeing them as being in the process; accepting and utilising them; making possible both appropriate expression and effective use; trusting them; making appropriate confrontation; willingness to risk; seeing process work as essential to effective task accomplishment; and greater emphasis on collaboration (Anderson, 2015: 43). According to Meyer (2004: 81-82), value is subjective. This implies that every individual in the organisation has a different set of values or beliefs. Every organisation will therefore have its own set of values based on the vision and mission statement of the organisation. Furthermore, Meyer (2004: 81-82) stated that the value of the organisation refers to the treatment of people with integrity and respect, ensure customer satisfaction, ensure that organisation employ competent people, encourage innovation and act upon the environmental and social responsibility.

It can therefore be implied that the values of the organisation are the ways in which the organisation handles its customers, suppliers, employees, and other institutions/enterprises. However, Values as described above, imply that business prosperity, growth and development depend not only on the talents, capacities, or skills to manage organisational activities, but also on the ways in which organisations/institutions handle customers, suppliers, employees, and other socio-economic requirements. Therefore, the purpose of values within the organisation can guide decisions and behaviour in drawing up the policy documents for the

organisation. Table 2.12 represents aspects of organisational values and ethical guidelines for organisational development. However, capacity development interventions in the organisation appear to be indispensable in improving values that guide decisions and behaviour in the drawing up of an organisational policy. Targeting workforce capacity development, values, decisions, and behaviour in drawing up policy documents for the organisation can change/improve/increase. Therefore, managerial skills development could influence change in decision-making and promote ways in which the organisation handles its customers, suppliers, and employees' values. Policy improvement, sustainability and implementation are discussed in the following sub-section.

Table 2.12 Values and ethical guidelines for organisational development

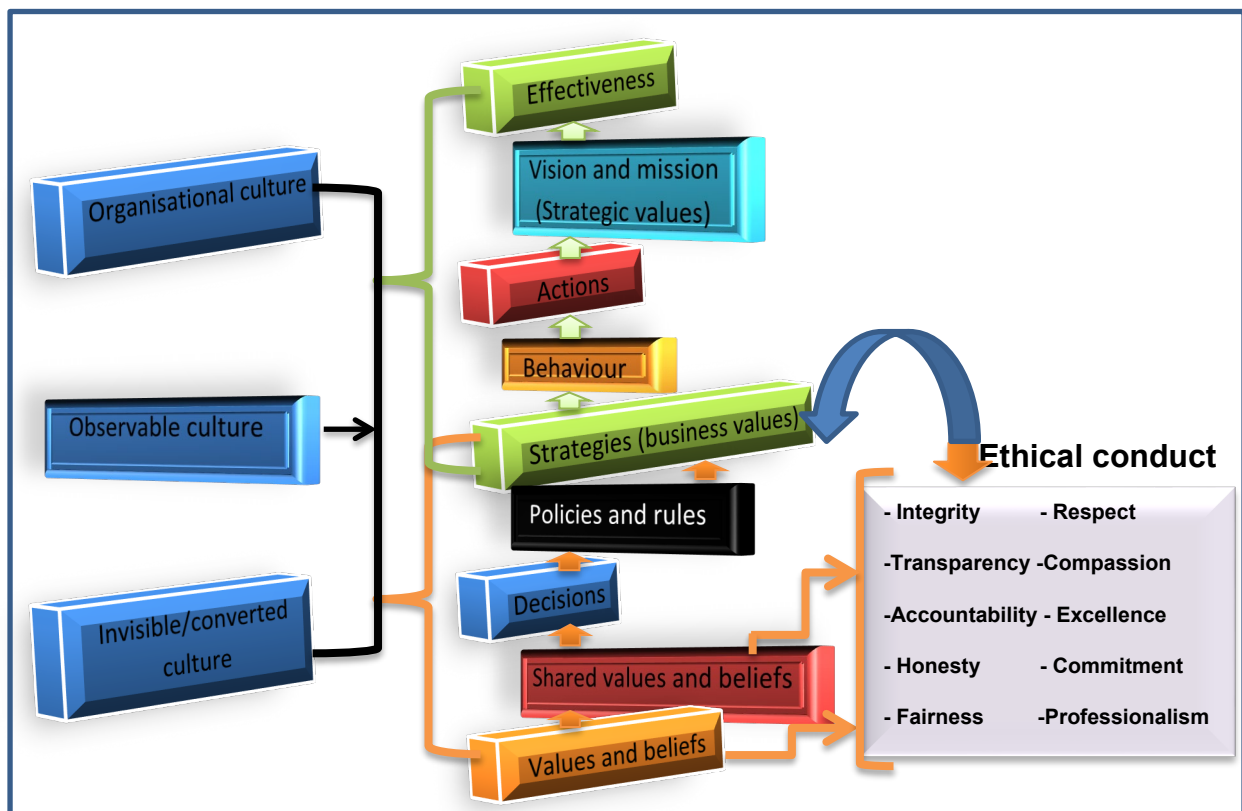
Values and ethical guidelines for organisational development professionals
▪ Quality of life: People being satisfied with their whole experience ▪ Health, human potential, empowerment, growth and excellence: The need of people to be healthy, aware of the fullness of their potential, recognising their power to bring potential into being, growing into it, living it and generally doing the best they can with it, individually and collectively. ▪ Freedom and responsibility: People need to be free and responsible in choosing workable and profitable actions. ▪ Justice: People working and living lives whose results are fair and right for everyone. ▪ Dignity and integrity: worth and fundamental rights of individuals, organisations, communities, societies, and other human systems. ▪ All-win attitudes and co-operation: People caring about one another and caring about working together to achieve results that work for everyone, individually and collectively ▪ Authenticity and openness in relationships: Through having a true self and being real. People must be aware of the socio-economic environment, aware of what is happening and making changes/adjustments while being authentic and connected to organisational vision, mission, values, policies and objectives. Authenticity and openness in relationships may involve important aspects such as love, trust, respect, acceptance, understanding, communication, productivity, alignment, wisdom, passion, focus, accountability, compassion, transparency, tolerance, capacity/competence, wisdom, and concern for others. ▪ Effectiveness, efficiency, and alignment: People achieving the maximum desired results at minimum cost, in ways that co-ordinate their individual energies and purposes with those of the system as a whole, the sub-systems of which they are parts and the larger system of which their system is a part. ▪ A holistic, systemic view and stakeholders: Orientation understanding of human behaviour from the perspective of the whole system (s) that influence and are influenced by that behaviour; recognising the interests that different people have in the system's results and valuating those interests fairly and justly.

- **Wide participation in system affairs:** Confrontation of issues leading to effective problem solving, and democratic decision-making

Source: Adapted from Meyer (2004: 19)

Table 2.12 indicates values that upkeep professional organisational development, which should commit to supporting and acting in accordance with the ethical guidelines that include responsibility to the self and to act with integrity; to be authentic and true to oneself. Meyer (2004: 19) also describes organisational values, culture, ethics, and effectiveness as a system of shared actions, values and beliefs that develops within an organisation and guides the behaviour of its members. These values, beliefs, rules, and guidelines always determine the actions of people within the organisation. Values therefore serve two important functions in organisations, namely the integration of members so that they can relate to one another and the way in which the organisation can adapt to the external environment. Figure 2.9 indicates the integrative approach to organisational values.

Figure 2.9 Integrative approaches to organisational values



Source: Adapted from Mayer (2004: 309)

Figure 2.9 illustrates organisational values that can be influenced by capacity development interventions and describes the nature of the business such as the products, market, customers, technology, and general business philosophy that are to be considered as important to pursue for long-term survival. Capacity development interventions can therefore have impact on creativity, risk, responsiveness, profit, competitiveness, quality, and aggressiveness, which are values that guide actions for capacity development, and which can expand and sustain the business in a particular market (Meyer, 2004: 309). One of the key factors from Figure 2.9 that can impact business growth or decay is the behaviour of groups of employees within the organisation which requires constant improvement, and which can influence the business effectiveness; vision and mission; strategic values and beliefs; actions, policies, and values; and rules; and decisions.

According to Kitsten (2001: 62), capacity development interventions could improve the behaviour of groups of employees in the organisation for the following reasons:

- *Improves the management of interacting groups:* This involves developing the culture or behaviour of people that are working together as a group. The work of one group can be the input for another. For example, human resource skills development can be an input into the production department in terms of production processes improvement, which can influence the upgrading of product quality. This in turn can make the business become more innovative and competitive and stimulate the marketing department to develop new strategies that can improve customer services and ensure very large marketing and distribution activities.
- *Improve the management of co-acting groups:* This consists of developing the culture, behaviour or abilities/talents of independent groups working at the same time. This implies that the work carried out by one group does not influence the work of another group, e.g. the work of an operator on a piece of machinery cannot be influenced by the work of an officer in the public relations department.

- *Improve the management of counter-acting groups:* This involve developing the culture, behaviour or skills of group of employees that are working on opposite sides; groups on opposite sides work together to solve differences, e.g. trade unions and management.

Capacity development can also improve group culture, behaviour or skills based on workflow, which suggests that the improvement of one person's work can influence another's essential constructive decisions. Moreover, orientations from top management can influence middle managers to improve the work supervision of general workers, which is needed to ensure performance. Thus, capacity development can be an instrument of improving and changing the behaviour of groups for organisational and socio-economic transformation.

2.3.2.5 Perspectives on capacity development interventions for organisational policy improvement, achievement, and sustainability

According to Meyer (2004: 172), capacity development interventions for policy improvement can be important towards increasing organisational effectiveness. Policy therefore can involve the broad guidelines of an organisation which guide managers and workers in decision-making. The policies of an organisation are guided by the laws of the country and reflect the values of the workers and management. Policies differ from organisation to organisation and from department to department, depending on the activities of the organisation and its different departments. For example, a policy of the human resource department could discuss the recruitment and skills training programmes of new and existing employees within the organisation, while the policy of the production department could discuss the processing method of product quality improvement, product development and channels of distribution to be used by the organisation.

Capacity development programmes interventions, therefore, could therefore support any organisational department and/or managerial leadership with improved skills or knowledge that empower them to continually work on policies upgrading, which in turn can promote skills training programmes of new and existing employees. Policy improvement can help in upgrading the processing method of product quality and lead

to the choice of the channel of distribution to be used by the organisation. However, an upgraded policy statement could be particularly important since the management and workers have to achieve the vision, mission and objectives of the organisation. Additionally, according to Meyer (2004: 173), capacity development interventions in any organisation can contribute the improvement and development of the:

- Policy for organisational self-renewal capacity;
- Policy for individual development;
- Policy for organisational performance;
- Policy improvement for altering on the job behaviour;
- Policy improvement for creating learning organisations;
- Policy statement which forms the basis from which all procedures and rules are drawn up;
- Way in which the policy statement sets limit of behaviour;
- Policy statement by showing the intention of all managers and workers to keep to the statements in the document;
- Policy statement, which proves that there has been communication between management and workers;
- Policy statement that recognises the skills development needs of all employees;
- Policy statement which emphasises the inter-dependence of all employees;
- Policy statement which recognises that workers are important to the organisation; and

- Policy statement that recognises the rights of workers and the obligations of management.

Furthermore, human capacities/skills development could also contribute to improving the steps in the formulation of a policy document. Therefore, useful skills training programmes within an organisation may help in long and short-term objective definition, which have to be drawn up by the respective levels of management and departments and could facilitate the policies to be written and communicated to all levels as proof of commitment by management. Furthermore, the impacts of capacity development programmes could be viewed through the importance of organisational policy on human capacity development. According to Meyer (2004: 173), South Africa has poor skills development. This situation is due to a high level of unskilled workers who lack the skills base for meaningful employment; inadequate training; low levels of expenditure on training because it is perceived as too costly and inadequate opportunities for the training of employees or the upgrading of skills levels.

Meyer (2004: 137) indicated that on average, South African firms spend about 2.7% of their payroll on training their employees, compared to between 4 and 6% in OECD countries and 10% in Japan. Additionally, some organisations that provide training for their employees may have a haphazard approach to training to satisfy immediate needs at the lowest cost, or training is limited to a specific organisation, which restricts the overall employability and mobility of employees (Meyer, 2004: 173). According to Weimer (2017: 59 – 61), a policy for organisational change or development is not only for capacity development interventions, but also to encourage, discourage, prohibit, or prescribe organisational actions. Public or private policies involve actions that organisations engage in terms of efficiency in profit-maximising and utility-maximising consumers. However, efficiency is not the only socio-economic value human dignity, distributional equity; economic opportunity and many other elements are values that deserve policy consideration along with efficiency.

Therefore, according to Meyer (2004: 173), the skills development policy or strategy can be seen as an important component of organisational capacity development interventions, which could assist managers in the following:

- Defining the method and process of recruitment, selection, training, compensation, administration and all other manpower activities;
- Providing criteria and basic guidelines for developing procedures for dealing with manpower within the organisation;
- Addressing the needs of the individual within the organisation;
- Providing incentives to ensure maximum productivity and encourage workers' participation in decision-making processes that affect them;
- Making provision for housing and educational programmes for employees;
- Aiming to assist each employee in developing his or her skills and having the opportunity to use these skills, thereby ensuring job-satisfaction and staying-power for employees;
- Aiming to promote and preserve the dignity and self-esteem of all employees;
- Developing and maintaining open lines of communication and personal contact between the organisation and employees;
- Ensuring freedom of association;
- Implying the promotion and remuneration of employees according to merit and seniority; and
- Ensuring the responsible, disciplined and rational conduct of employees and employers towards one another and towards the South African community.

In light of the aforementioned, it can be stated that capacity development interventions remain an indispensable tool for policy upgrading in terms of achieving the objectives of the organisation. Thus, according to Akintoye (2009: 303 – 305), policy best practice (the awareness of the implementation of achievable policies) can lead to

organisational innovation, given that innovation is an effort made by one or more individuals that produces an economic gain, either by reducing costs or through increased incomes. Further, skills development process in the organisation provides innovative and competitive advantages with respect to products, markets, and technological production processes.

2.3.2.6 Perspectives on capacity development interventions for organisational goals and objectives realisation and sustainability

According to Sharma (2018: 321), goals refer to the broad statement of purpose usually captured in the mission statement. However, organisational objectives may attract and retain competent manpower; determine salary levels; make provisions for incentives; boost morale of employees; get productivity increased; ensure equity in pay for similar jobs; be cost-effective; be flexible to accommodate any organisational changes; to have wage differentials; ensure meeting legal obligations and maintain a satisfactory public-relations image. Sharma (2018: 322) emphasised that individual objectives within the organisation may consist of treating every individual fairly and equitably and paying every employee according to their worth. However, Sharma (2018: 322) also stated that organisational objectives could focus on keeping workers' unions satisfied, ensuring that consumers' interests are duly protected and abiding by obligation and government policies.

In light of the aforementioned objectives, employees therefore have to be empowered with skills training programmes to ensure that performance and growth takes place in effort for these objectives to be achieved. According to Meyer (2004: 173), organisational objectives for skills development policy need to recognise skills weaknesses and improve a skills development strategy to address them. In South Africa, this policy is embodied in the Skills Development Act of 1998, the Skills Development Levies Act of 1999 and numerous policy documents and regulations emanating from this legislation (Meyer, 2004: 173). These acts need to be continually reviewed and improved in terms of eventual change in the business environment and in terms of organisational vision, mission, objectives, and interests that are forced to improve in relation to business environment instabilities, mutation, or evolution. For example, South Africa is currently seeking potential investors or entrepreneurs to

invest in business development and create more opportunities for jobs. This also appeals for progressive policies or strategies changes in terms of skills training and skills development in the country, as well as in terms of facilities that may promote both business and human capacities development. Therefore, flexible, and attractive legislation on business development and on employees' capacity development can help organisations that are investing in skills development to achieve their vision, mission, and goals. However, the broad mission statement of the organisation has to be compartmentalised into long-term goals and shorter-term objectives in every department and section of the organisation. These goals and objectives should refer to the tasks or functions that are ultimately carried out within every department. Goals and objectives guide organisational activities towards achieving the organisational mission statement. Furthermore, goals and objectives should include and guide the formulation of strategy and its eventual activities as carried out by every management level and functional unit within the organisation.

The activities of the organisation are therefore influenced by the articulated objectives. Therefore, product or service improvement and development; organisational growth and expansion; technological change and best practice; increased productivity; customer satisfaction; and human skills development could be amongst the most indispensable elements for which goals and objectives improvement, achievement and sustainability ultimately require capacity development intervention services. The way organisations can express the needs or requirements for change and development suggests that human capital should be considered as the key point of any organisational development process. Thus, according to Meyer (2004: 174), organisational goals and objectives to develop the skills of the workforce should entail:

- Improving the quality of life of workers, their prospects of work and labour dignity;
- Improving the productivity and competitiveness of employees at the workplace; and
- Promoting self-employment initiatives.

Moreover, Meyer (2004: 174) emphasised that employers should find themselves encouraged to use the workplace as an active learning environment:

- To provide employees with opportunities to acquire new skills;
- To provide opportunities for new entrants to the labour market to gain work experience; and
- To employ persons who find it difficult to find employment.

In addition, according to Meyer (2004: 174), other reasons for developing skills at the workplace include:

- Encouraging workers to participate in learnerships and other training programmes;
- Improving the employment prospects of persons previously disadvantaged by unfair discrimination and poor education and training;
- Ensuring the quality of education and training in and for the workplace;
- Assisting work-seekers to find work, retrenched workers to re-enter the labour market and employers to find qualified employees; and
- Providing and regulating employment services.

However, in the case of the South African petroleum industry, it can also be indicated that the goal, objective, and strategy for skills development (within the organisation) is to promote equity and redress skills shortages in the workplace. Furthermore, skills development in the workplace can support in correcting past discrimination, whilst promoting an integrated approach to capacity development programmes to overcome the past fragmentation between theoretical and practical work, between brainwork and handwork, between technical and academic training and between formal, informal and non-formal training (Meyer, 2004: 174).

Therefore, capacity development programmes, in supporting workforce skills development, could contribute to having clear and formal goals and objectives through providing direction, setting standards, and providing motivation.

2.3.2.7 Perspectives on capacity development interventions for organisational strategy improvement and sustainability

According to Burke (2014: 230), organisational strategy concerns the how (or implementation); that is, how the mission is to be achieved. Organisational strategy improvement and sustainability most often rely on the nature of tasks or functions that employee will have to perform. Therefore, the nature of tasks and required skills and knowledge within the organisation necessitates intervention programmes that forecast the recruitment and training of employees who will be able to carry out the required tasks. However, Meyer (2004: 177) stated that the structure of the organisation, its technology, its production processes and its products and services also determine the types of employees that need to be employed and the skills training programmes to be implemented. Furthermore, according to Meyer (2004: 177), the organisational skills development strategy involves skills plans that are continuing and which are drawn up by top management.

The period for which these plans are drawn up is usually flexible, depending on the needs and objectives of the organisation. Strategy, therefore, refers to the way in which things are done, and the overall methodology of the organisation towards achieving the objectives set. According to Meyer (2004: 177), skills development planning should incorporate learning pathways, which enable workers to gain credits for all learning programmes. For example, skills development plans should enable an engineer to develop more skills from the (on-the-job training) in-work engineering training and together, these programmes should give him/her access to performance improvement, better job conditions and job satisfaction. However, access to performance, better job conditions and job satisfaction (employee satisfaction: expectation of the job and the rewards that the job could provide) can generate more production/services, which can in turn boost the organisation to a competitive position in the market.

Uddin (2016: 53) adds that skills development programmes within an organisation can “PUSH” a good environment of the job, higher salary and smooth the way of developing a career concisely, for a complete package of growing life; and “PULL” up organisational recognition, respect and reputation from competitors or external partners. A further example is that new potential candidates, obviously more energetic and goal oriented would like to work in an environment where they will get available facilities. For instance, a good learning environment or a good system of communication between the management and employees could result in creating mental satisfaction for the employees. Furthermore, according to Uddin (2016: 53–54), the strategy of skilling the workforce with new programmes can influence skilled and satisfied employees to generate customer satisfaction through excellence in service performance that can lead to organisational success, resulting in improved financial success.

This implies that there can be a direct connection between employee capacity development; organisational performance, development, and success; job satisfaction and customer satisfaction. Additionally, the strategy for employee skills development could not only enhance organisational productivity, but also increase the quality of work. Employees are more dedicated and productive when they have competencies and experience that give them confidence to fulfil their tasks accurately. Therefore, skilled employees can have a positive impact on organisational productivity and customer satisfaction. This implies who employees that perform tasks that have high skill variety and job significance can experience greater levels of job satisfaction than their counterparts who perform tasks that are low on those attributes (Uddin, 2016: 34). In light of the aforementioned, strategic skills planning could be a proactive process during which key decision-makers in an organisation decide on the best business opportunities, challenges and threats in the organisation’s business environment.

However, strategy concept, it seems to be practically and essentially profitable for decision-makers to keep developing and continually improving the skills/capacities of the workforce, which could support the steps in formulating strategic plans. Thus, strategic planning for skills development could assist in having a skilled workforce available for the present and future because any unexpected situation can arise in the

organisation; employees can unexpectedly resign, or an unexpected situation (death) can occur. Therefore, the organisation must have contingency skills training plans in place to overcome these situations. This justifies one of the reasons why employees need to be trained and developed in advance to fill opportunities that may arise. Meyer (2004: 178-179) also suggested that capacity development programme interventions could contribute to developing human resource capacity by deciding what the values/reasons for the existence of the organisation are. Capacity development is critical in analysing the external environment in terms of political, economic, social, and technological aspects; in assessing the strengths and weaknesses of the organisation; in developing goals and objectives; and for developing strategies/plans of action necessary to achieve the goals of the organisation.

Furthermore, it is important to indicate that strategic planning has serious implications in the human resource management of an organisation. However, traditionally, organisations always concentrate efforts on financial and marketing strategies improvement and development, and often neglect human resource strategies improvement and development and/or skills development programmes interventions from other sectors or departments. Table 2.13 illustrates the link between organisational development and skills development.

Table 2.13 Link between skills development programmes and organisational development

Skills development	Organisation development
Changing the needs of the organisation	Capacity development or the skills development strategy can improve the need for organisational development resulting from increased globalisation and international competition, as well as the socio-economic and political changes, which necessitate workplace transformation. Co-ordinated research on national and international workplace and industry trends will enable the organisation to plan their own skills strategies in preparation for eventual challenges. The linkage of workplace skills development plans to sector skills development plans could provide opportunities for organisations to align their planning to the broader needs of the economy. It can also assist in long-term planning as anticipated workplace changes and future needs will be analysed by

Linkage of skills development to national and organisational strategies improvement

Large-scale workplace transformation

the SETAs. This can enable organisations to keep pace with the rapidly changing environment by tapping into research done by SETAs.

Organisational skills development is essentially aimed at the large-scale transformation of the workplace. Organisational development will have to create a climate conducive to the effective implementation of the skills development strategy.

Source: Adapted from Meyer (2004: 179-181)

Table 2.13 indicates that there can be a solid link between skills development and organisational development, which for example indicates opportunities for organisations to align their planning to the broader needs of the economy, as well as enabling the organisation to keep pace with the rapidly changing environment. It also indicates actions that have to be undertaken to meet the requirements of the skills development strategy. According to Meyer (2004: 181), the benefits of effectively planned skills development and the advantages of paying attention to human capacity development (HCD) at the time of strategic planning involve the following:

- HCD provides the framework for a planned approach to the management, utilisation and development of the human resources of the organisation;
- It encourages a structured approach to identifying weaknesses and areas requiring development, which contributes towards the effective planning and development of learning strategies to overcome performance problems;
- It creates an understanding of how strategic planning can benefit human resource planning;
- It encourages the identification of problems that contribute to low productivity, such as low motivation and morale; lack of loyalty to the organisation; poor supervision and management skills; and poor teamwork;
- It stimulates the proactive recruitment of the correct workforce;

- It encourages the better development and training of the workforce;
- HCD addresses historic inequalities and promotes the development and utilisation of the skills of employees who were previously restricted to menial work;
- A planned approach to skills development should contribute towards increasing the motivation of employees, due to the visible interest shown by the organisation in their developmental and career paths;
- It improves control of aspects relating to human resources, such as salary/wage management and training;
- HCD should stimulate interest in undertaking development programmes, as employees recognise that through planned learning pathways, they can gain credits towards nationally and internationally recognised qualifications, thus improving their career prospects and employability;
- It establishes quality control mechanism, to ensure that learning programmes achieve the desired outcomes of improving the competences of employees to perform their jobs, thereby increasing the return on investment in training;
- If effectively implemented, HCD will increase the skills levels in organisations, which will in turn raise the level of productivity, improve competitiveness and increase profit margins;
- It facilitates a co-ordinated approach towards addressing the skills needs both in localised sectors of the economy as well as nationally, which should contribute towards national economic growth; and
- Furthermore, individual organisations will be contributing towards economic and social development, while simultaneously creating an environment more conducive to conducting business.

Additionally, from the aforementioned perspectives, it can be specified that an effectively planned skills development strategy can greatly assist in increasing productivity. Therefore, Meyer (2004: 179-181) indicated that the importance of capacity development interventions on strategic planning/management for human resources strategies improvement can comprise:

- The costs to personnel, which can be controlled (these include salaries/wages, employee replacement costs, recruitment, training and industrial relations, costs;
- The functioning of the enterprise, which will be more effective, since specialised personnel could apply more effectively and efficiently throughout the organisation; employees could be motivated and consequently be more stable and management could pay attention to management style and adapt it to the operations of every section; and
- New departments and new operations could be implemented by paying attention to the skills, knowledge, and aptitude of personnel; under-developed and unused potential in personnel could be realised and applied; managerial abilities could be recognised and applied; personnel could be trained to be ready for change; and the organisation could become competitive.

Moreover, Meyer (2004: 179-181) specified that the necessity of having strategic skills plans is for preventing and facilitating changes in the markets, competitors, technology, products, and government regulations; to provide important information for dealing with employees in the organisation and to ensure organisational productivity (qualified employees will ensure productivity). Kirsten (2001: 76) specified that organisations can only achieve their objectives through the workforce and that the workforce strategic planning consists of the process of deciding in advance about the correct types of skills that are needed to fulfil various functions/tasks in the organisation, as well as deciding where the tasks will be carried out and when. Capacity development intervention therefore prevents skills shortages, in terms of projecting the future from the present.

The understanding of all the aforementioned explanations shows that manpower skills training plans is a continuous and/or ongoing process because the internal and external factors, which “PULL and PUSH” an organisation to change and development are fluctuating continuously. It is therefore important for organisations to adapt themselves and use strategies that could maintain a culture of productivity, competitiveness, innovative and effectiveness. Therefore, capacity development interventions appear to be one of the indispensable tools/strategies that can develop the right and suitable skills for organisations to reach their planned objectives.

2.3.2.8 Organisational vision, mission, values, policies, objectives and strategies improvement and the impact on socio-economic transformation

Figure 2.4 illustrates the organisational vision, mission, values, policies, objectives, and strategies improvement and impacts of socio-economic transformation. According to Sharma (2018: 241), employee skills training and skills development are a life-giving and dynamic element of business. This implies that no business can run successfully without efficient, competent, or skilled employees. It has been acknowledged that experience as a way of achieving efficiency and success is a slow and expensive process. Therefore, skills training and skills development have become very important in terms of organising a body of knowledge, principles, and techniques. Importantly, knowledge can be communicated to employees for the purpose of business change or growth, as well as for career improvement and development.

Sharma (2018: 241) further indicates that skills training and skills development are not only significant for new people, but also equally important for lower- and supervisory-level employees to equip them with the new developments in managerial skills. Furthermore, it is also stated that skills training and skills development are specifically significant in the context of industrial and organisational management. Therefore, it is necessary for an organisation to perceive as to what employees feel, think and desire along with discovering how workforce devotion and commitment can be increased. However, the strategy for employee skills development can be also related to job satisfaction, which is more of an attitude or an internal state that can develop a personal feeling of qualitative or quantitative achievement (Uddin, 2016: 54).

Therefore, amongst the five factors of production that require skills training or skills development, management system improvement is the one of the most important factors. This is a given that in today's specialisation, automation and scientific management are given much emphasis; this because all aspects of the organisation can be made more effective through efficient management and efficient management is possible through proper skills training and skills development (Sharma, 2018: 241). Recently, South Africa has been critically discussing radical socio-economic transformation and conferences are being organised to attract potential investors to boost the economy, which is in the recession phase (ANC 5th National Policy Conference, 2017 and Gumede, 2017). In addition, South Africa's vision for long-term sustainable socio-economic transformation is to eliminate poverty and reduce inequality (Manuel, 2011: 365).

The core of this plan will need to focus on factors that promote progressive investments where political, economic, social, technological, ecological, and educational sectors underpin significant considerations on capacity development programmes for the improvement of each factor (Smit 2011: 64 and Buss, 2010: 6). Therefore, any trends in socio-economic transformation in South Africa will necessarily require more trained and developed employees and managers. As today's world is a world of technological speed or industrial innovation, new skills or specialisation need also to be developed in relation to organisational functions such as financial management, human resources management, marketing management, materials management, production management, and inventory management, which are becoming into prominence.

Furthermore, new techniques and specialities are coming into existence. In the South African petroleum industry, it was indicated that there is shortage of efficient technical skills. This crisis may be one of the reasons that justify certain difficulties related to its performance, growth, and development. However, according to Sharma (2018: 242-243), possible socio-economic transformation in South Africa requires significant implications and commitment from the government of South Africa, the South African petroleum industry and many other organisations or institutions to mostly emphasise the skills training and skills development of employees for the following reasons:

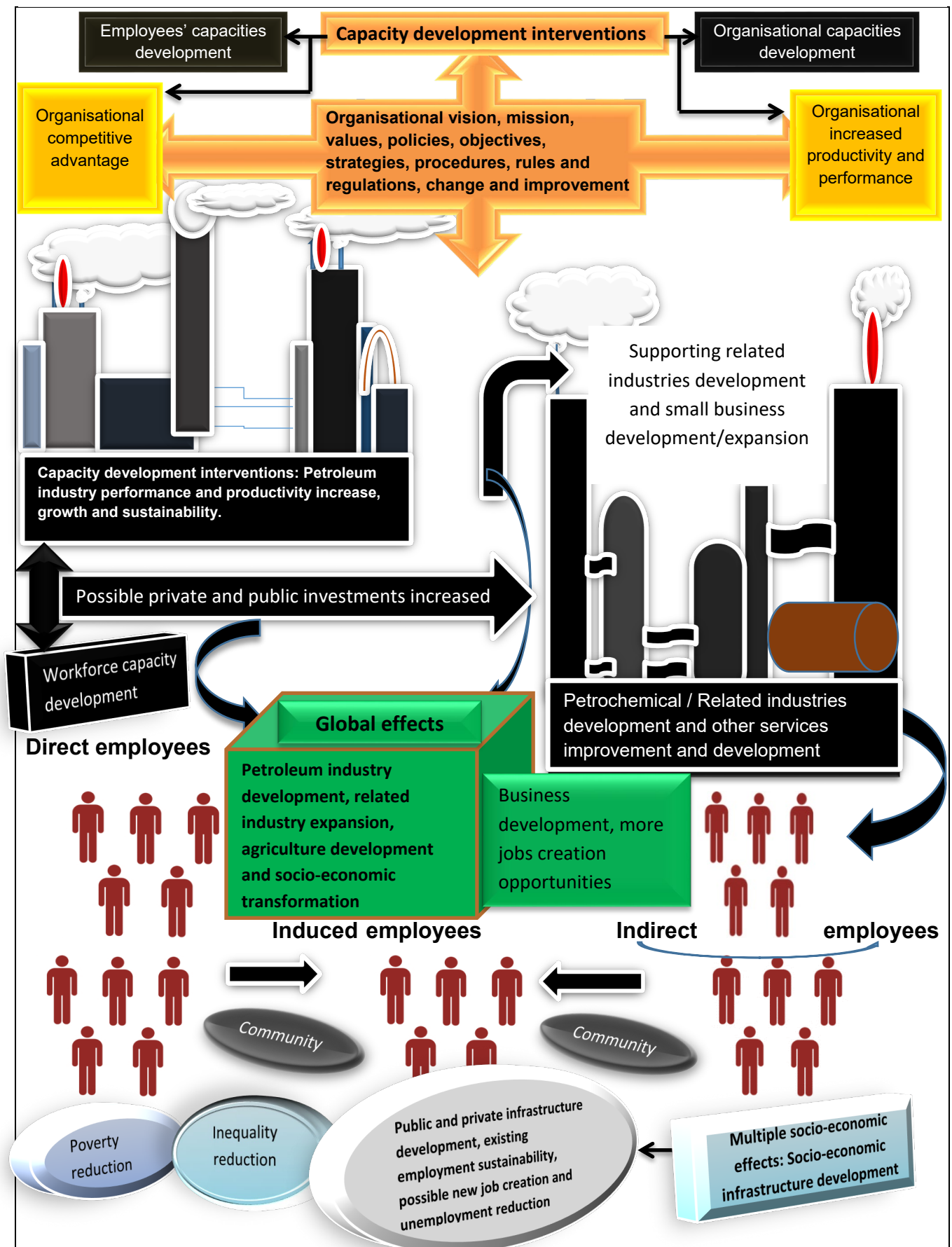
- ❖ **Technological and social changes:** Contemporary organisational vision, mission, values, policies, objectives and strategies improvement, achievement and sustainability will have to cope with the speed rate of technological and social changes. Sharma (2018: 242) postulates that technological and social changes have made it imperative to have employees and managers who are trained to cope with these changes or developments. Therefore, automation; the fruits of accelerated research; electronics/computers; intense market competition from foreign nations; new markets in emerging/developing countries; enlarged voice and the elevated role of labour in industry; government interference; greater interest by the public and government in the actions of business houses; and exercising control over them and so on are amongst the manifestations of change and development.
- ❖ **Professionally managed enterprise:** Sharma (2018: 242) stated that there has been a pronounced shift from owner-managers to employee-managers. Therefore, management has been recognised as a distinct kind of occupation consisting of teachable skills and a unified body of knowledge. However, the organisational vision, mission, values, policies, objectives and strategies improvement, achievement and sustainability require employees and managers, who have updated knowledge and managerial skills to cope with the complexity of modern organisations.
- ❖ **Research orientation:** Sharma (2018: 242) indicated that within the past few decades, there has been an ever-increasing amount of research-generated knowledge on the principles and techniques of administration. This appeared to be necessary for organisational vision, mission, values, policies, objectives and strategies improvement, achievement, and sustainability. Therefore, this knowledge of the principles and techniques of administration applies to both general management as well as its various functional fields such as human resources and industrial relations, production, finance, marketing, and accounting (Sharma, 2018: 242). For successful vision, mission, values, policies, objectives and strategies improvement, achievement, and sustainability; organisations are required to receive and make use of new knowledge, which is necessary for change and transformation.

- ❖ **Recognition of social and public responsibilities:** Sharma (2018: 243) stated that in the present day, employees and managers are supposed to be aware about their social and public responsibilities, which require close links with the community and the government. Organisations can therefore be linked to the community and government through socio-economic activities (including products and services that can be responsible for a community's needs/wants satisfaction and organisations' profit generation and maximisation), which need to be done in relation to the government and organisational vision, mission, values, policies, objectives and strategies improvement, achievement, and sustainability. This however requires new awareness, sensitivity and the skills development of employees and managers on both sides, government, and organisations.
- ❖ **Frequent labour management strife:** Sharma (2018: 243) points that in working to overcome or to at least minimise labour-management strife, it is necessary to have skilled, trained and developed employees or management personnel. Frequent labour strife, if not well managed by skilled employees and managers, could degenerate or negatively affect efforts towards organisational vision, mission, values, policies, objectives and strategies improvement, achievement, and sustainability. The efficient or effective management of labour strife could possibly be favourable to organisational success.
- ❖ **Increased size and complexity of organisations:** Moreover, Sharma (2018: 243) indicated that the increased size and complexity of most organisations: industrial, commercial, government or non-profit public services, require skills trained and skills developed employees and managerial personnel. Therefore, according to Sharma (2018: 243), the main objectives of management skills training and skills development involve imparting the knowledge of basic principles of management; training future employees and executives to act according to new scientific and timely methods. In addition, management skills and skills training include also getting the knowledge of general, industrial, and managerial values; developing the skills and competencies to analyse and take

a decision related to any business problem; implementing managerial principles through oral and written methods; and developing leadership qualities. Poise

Thus, according to Sharma (2018: 243-244), the content of skills training and skills development programmes depends largely upon the needs of an organisation. Most programmes are employee development programmes that provide a framework for the consideration of problems in developing an executive or management development programme. The content of skills training and skills development produce various types of abilities. These include ability to think, organise, handle people, to plan, lead loyalty, decisiveness, ability to solve problems, courage, self-motivation, desire for achievement and prestige, social balance and understanding, sense of responsibility, emotional balance and poise, ability towards community and associations and attitude towards economic and political systems. Figure 2.10 illustrates the community's promising benefits that the petroleum industry performance and development could experience due to capacity development interventions.

Figure 2.10 Community's promising benefits from the petroleum industry performance and development due to capacity development



Source: Adapted from Kikasu (2017)

Figure 2.10 shows the promising direct, indirect, and induced socio-economic effects of capacity development interventions for petroleum industry development. However, employee capacity development underpins improvement; adoption of leading technologies; and ultimately productivity to drive strong socio-economic transformation. Skills development programmes for employees in the workplace can also boost earnings and enhance individuals' opportunities and wellbeing, and support thriving communities and societies (JICA Report, 2011: 5). Therefore, to these direct, indirect, and induced effects, it can be stated that with skilled employee commitment, business outcomes can be improved, productivity can be enhanced, and commitment can be intensified.

Yet, there can be a cause-and-effect relationship between employee skills development, organisational performance, and socio-economic transformation. For example, employee and customer commitment and satisfaction in terms of the products/services provided or benefited could be affective and change and improve the business environment, as well as the community's lifestyle well-being through the channels of jobs opportunities higher potential for personal income; better health care systems improvement and advancing education system projected (Uddin, 2016: 54). Thus, the great expectations from people skills development and organisational performance are socio-economic transformation, which in turn can create endless opportunities.

2.3.3 Capacity development interventions tools

2.3.3.1 Introduction

Capacity development interventions for human and petroleum industry capacities development involve the process of receiving cooperation development that includes programmable aid and other forms of external assistance. According to Bester (2015: 2), capacity development programme interventions can be considered as one of the forms of external assistance that aim to enhance the ability of people, organisations, and society as a whole to manage their affairs successfully. Moreover, capacity development interventions can be understood as the process whereby people, organisations and society as a whole unleash, strengthen, create, adapt and maintain

capacity over time (Bester, 2015: 2). However, capacity development intervention tools that can promote or support human capacity development, petroleum industry development and socio-economic transformation may be various and may possibly depend on organisational requirements and policies. According to Sharma (2018: 197-199), skills training and skills development, education, learning, and motivation are the most important tools that can be used in implementing capacity development interventions to contribute to the organisational vision, mission, values, policies, objectives and strategies improvement, achievement, and sustainability. Thus, the skills training prototypes for human and organisational capacities development, the concepts of training and training programmes are discussed in the following sections.

2.3.3.2 Training and education in the workplace

Training and education in the workplace provide an opportunity for employees to develop various capacities and become productive, leading to increased organisational performance. Therefore, according to Johnson (2018: 4), training for employees in the workplace may be regarded as a social exchange or a process through which an organisation indicates its readiness to accommodate its employees' interests by offering training opportunities in fulfilling its business objectives. Furthermore, Johnson (2018: 4) indicated that investment in an employee's education and training is similar to a business investment in equipment. Therefore, investment in human capital is the most important in terms of knowledge, expertise and skills accumulation through education and training. The fundamental assumption of this understanding lies in the belief that education and training bring about increased abilities or aptitudes in fulfilling the organisational vision. Table 2.14 clarifies different types of training programmes at different management levels.

Table 2.14 Need and significance of workplace training programmes in any organisation

Need and significance of training programmes	Principles of training programmes	Types of training programmes	Methods of training programmes	Challenges of training programmes
a. Higher level of productivity b. Reduced learning time c. Heightened morale d. Reduced supervision e. Reduced absenteeism and turnover f. Reduced accidents g. Reduced wastage and less damage to plant and machinery h. Increased organisational stability and flexibility i. Standardisation j. Helpful in performance appraisal k. Meeting special manpower requirements l. Beneficial to employees m. Obsolescence prevention n. Helpful in gaining acceptance from peers o. Reduced labour turnover P. Beneficial to management.	a. Motivation b. Feedback c. Reinforcement d. Active participation e. Whole versus part f. Individual differences g. Specificity h. More use of supervisors	a. Skills training programmes b. Retraining programmes c. Cross-functional programmes d. Team training programmes e. Literacy training programmes f. Creativity training programmes g. Company in-house training programmes h. Company/local school training programmes i. Company/local or state government training programmes j. Customer service training programmes; and k. Diversity training programmes.	1. On-the-job methods: a. on a specific job. - Experience - Coaching - Understudy b. Position rotation c. Special projects d. Selective reading e. Apprenticeship f. Vestibule school g. Multiple management 2. Off-the-job methods a. Special courses and lectures b. Conferences c. Case studies d. Brainstorming e. Laboratory methods: electronic performance support system (EPSS) f. Tele-training g. Video conferencing h. MP3/instant message i. Slides and videos tapes j. Programmed learning k. Audio-visual-based training l. HRIS learning portals m. E-learning n. Mentoring o. Informal learning p. Distance and internet learning	Challenges in training involve the following interrogations: a. Is training the solution? b. Are the goals clear and realistic? c. Will the training work? The leadership/management is to answer these questions prior to initiate the training process.

Source: Adapted from Sharma, (2018:200-2013)

Table 2.14 describes the need for and importance of training, principles of training, methods of training, types of training and challenges in training. In addition, Table 2.14 denotes the sub-sections involving the need and significance of training programmes, principles of training programmes, types of training programmes, methods of training programmes and challenges of training programmes. According to Sharma (2018: 213-214), capacity development interventions or capacity development programmes can use various training tools to improve individual, group, or organisational performance. The most used types of training in the workplace comprise skills training; re-training; cross-functional training; and team training; literacy training; creativity training; company in-house training programmes, company/local or school training programmes; company/local or state government training programmes; crisis training programmes; customer service training programmes; and diversity training programmes.

However, the concept of training in the workplace can have various meanings. Therefore, according to Sharma (2018: 198), training refers to any process by which the aptitudes, skills, and abilities of an employee to perform specific jobs can be increased. Uddin (2016: 54) postulates that employee skills development can be closely linked to individual's change of behaviour in the workplace, and that skills training or education programmes in the workplace can be the key ingredient that could lead to employees' recognition, income improvement, promotion and the achievement of other goals that lead to a feeling of fulfilment. Furthermore, skills training programmes are a useful tool for workforce capacities development and need hence to be part of the organisational policy, practices, and commitment.

Uddin (2016: 54–55) posits that employee skills development can have a major influence on organisational well-being regarding job productivity, employee turnover and life satisfactions and can also foster workers' sense of achievement, which can be directly associated with organisational and/or individual improved efficiency as well as to personal welfare. Thus, according to Sharma (2018: 198), the meaning and understanding of the training concept as a tool to organisational change and socio-economic transformation can involve the following:

- A short-term process utilising a systematic and organised procedure by which non-managerial personnel learn technical knowledge and skills for a definite purpose;
- Instructions in technical and mechanical operations meant for operatives or non-managers;
- Courses that are typically designed for a short-term stated set purpose, such as the operation of some piece (s) of machinery;
- An act of increasing the knowledge and skills of an employee for doing a particular job; and
- A formal training programme is an effort by the employer to provide opportunities for the employee to acquire job-related skills, attitudes, and knowledge.

However, Sharma (2018: 198) specified that the objective of training is to achieve a sustainable change in the behaviour of those trained. Moreover, change is expected in organisational productivity, in organisational performance, in the reputation of employees, as well as the organisational reputation and in the country's socio-economic transformation (change in the job quality, products and services improvement and community's lifestyle enhancement). Therefore, any behaviour that has been learnt is a skill and the improvement of skills is indispensable for organisational vision, mission, values, policies, objectives and strategies improvement, achievement, and sustainability.

Within an organisation, this means that the trainee shall acquire new techniques, skills and problem-solving abilities and develop work attitudes. Currently, it is expected that organisations, for most specific jobs, will require the extensive use of knowledge and employees will be required to share and use this knowledge in an innovative manner to improve a product or render services to customers as the case may be. Yet, training in any organisation is expected to be linked to strategic business goals and objectives, as well as to ensure that training is effective.

Additionally, according to Sharma (2018: 199), training effectiveness at the workplace is therefore concerned with increasing knowledge and skills in doing a specific job, while education is concerned with increasing general knowledge and understanding the total environment. Training a worker how to operate a particular machine is training and giving a course in public administration and economics for example is education. Thus, continuous education in the workplace requires employees to understand the entire work system, including the relationships amongst their jobs, the work units, and the organisation. This suggests that training at the workplace can take the form of continual education and that training or learning at the workplace cannot be effective if workers (trainees) lack motivation to take advantage of it. Therefore, motivation for skills training and skills development at the workplace requires trainers to conduct task and performance analyses for assessing workers' training needs; to make skills transfer easy; to provide employees with a synopsis of the training material; and offer them opportunities to practice the skills programmes acquired (Sharma, 2018: 199-200).

2.3.3.3 The significance of training and education programmes in the workplace

According to Sharma (2018: 200), operational effectiveness within an organisation requires that workers be involved in training and learning to perform the functions of their current jobs at a reasonable level of proficiency, which is possible only when there exist systematic training programmes in the organisation. In addition, there is need for some type of training activities for workers in the organisation because all types of jobs in the organisation usually require some or the other type of training if their effective functioning is to be ensured. This implies that training at the workplace is needed not only for newly recruited employees who are to learn the ways to perform their jobs, but also for existing employees who must also learn about rapid technological changes requiring new skills and expertise. Consequently, this also suggests that training and learning at the workplace is significant for both new and existing employees in the organisation. Sharma (2018: 200) also indicated that training at the workplace is important in improving/increasing competitive advantage and it can be seen as a useful means of coping with changes fostered by technological innovation, market competition, organisational structuring, and demographic shifts.

Moreover, training programmes in the organisation are a continuous process that exists to impart new knowledge and skills to newly recruited employees. They also serve as a refresher course in updating and upgrading existing employees' skills. However, there is also need for the training programmes budget to be continually reviewed because of the requirements for workers' skills development and for organisational performance and competitiveness.

2.3.3.4 Need and implication of training programmes in the workplace

In the aforementioned sections, it was indicated that training programmes in the workplace involve employees' skills development and commitment to business outcomes, which can boost organisational productivity, competitiveness and innovation, as well as create more opportunities for employees' income improvement, promotion and self-satisfaction. According to Erasmus (2018: 188), skills development is needed at different managerial levels, whether in public or private organisations. Therefore, managers' thinking, and planning skills/abilities development are needed to view the business and its parts in a holistic manner. Furthermore, workers' skills development is required to be developed in terms of improving the abilities to work with others as a team in the organisation. However, workers' skills development can help managers to understand and communicate with the workforce and to lead motivate and develop team spirit.

Erasmus (2018: 188) emphasised that skills development is needed to improve the ability of workers in terms of using the knowledge of a particular discipline to perform a specific task. For example, managers at lower levels should develop their skills or have sufficient knowledge of the technical activities to maintain and succeed in supervision practice. In light of the aforementioned, three key levels of skills development will be explained in Chapter 3, related to the types of critical skills needed to alleviate skills shortages for petroleum industry performance and socio-economic transformation. Uddin (2016: 53 - 54) postulated that there is a cause-and-effect relationship between employees' skills development, organisational change/performance, and socio-economic transformation. This relationship also involves organisational products/services improvement/development to customers' satisfaction and community's lifestyle improvement/change.

Therefore, in view of Table 2.13, Sharma (2018: 201) indicated that the need and implication of training programmes for any organisation could provide various socio-economic effects. These include the following:

- a. Higher level of productivity:** This can be reflected through an improvement in the quantum of output or quality or both, which in turn depends on the updated knowledge and skills of employees in their current jobs, which is possible only through systematic programmes of training.
- b. Reduced learning time:** Systematic training programmes not only reduce learning time, but also teach the best way of doing things. In the absence of systematic training programmes, employees have to learn by a trial-and-error method or by observing others, which usually takes a long time and even then, one may not learn the best methods and techniques.
- c. Heightened morale:** According to Sharma (2018: 201), the possession of needed skills can help to meet such basic human needs as security and ego satisfaction. Morale can be heightened through elaborate personnel and human relations programmes only if there is a solid core of meaningful work done with knowledge, skills, and pride.
- d. Reduced supervision:** Training programmes reduce the need for constant and detailed supervision because the trained employee is one who can perform with limited supervision. Training makes an employee self-reliant in his /her work, requiring very little supervision, although training programmes do not eliminate the need for supervision.
- e. Reduced absenteeism and turnover:** Trained employees can experience direct satisfaction associated with a sense of achievement and knowledge. While working, workers feel that they are developing their inherent capabilities of work. Hence, they find little scope for dissatisfaction, frustration or remaining absent or leaving their jobs.
- f. Reduced accidents:** According to Sharma (2018: 201), most industrial accidents take place because of deficiencies in employees, rather than flaws in

equipment or working conditions. Training programmes therefore improve both job skills and safety attitudes, which ultimately result in a reduced number of accidents.

g. Reduced wastage and less damage to plant and machinery: Sharma (2018: 201) stated that training programmes teach the best way of doing a job and of handling machines. They result in less wastage and the least damage to equipment. Trained workers always make better and more economical use of materials and equipment.

h. Increased organisational stability and flexibility: An organisation is considered stable only when it has the ability to sustain its effectiveness despite the loss of its key workers, which is possible only through the creation of a reservoir of trained replacements. Similarly, the flexibility of the organisation requires its stability to accommodate short-run variations in the volume of work. According to Sharma (2018: 201), this can be achieved by developing multiple skills amongst its workers through training programmes. Such trained workers can be easily transferred wherever the volume of work is more.

i. Standardisation: According to Sharma (2018: 202), well trained workers are less likely to make operational mistakes. Hence, with the help of training programmes, work methods can be standardised and made available to all concerned, which will result in better performance and the production of uniformly standardised goods.

j. Helps in performance appraisal: Training programmes play a very useful role in the performance process. Training effort must make sense in terms of what the organisation wants each employee to contribute to accomplish organisational goals. Establishing a linkage between learning and organisational performance is a critical issue for training professionals. That is why the issue of workplace learning and performance has assumed added significance.

k. Meeting special manpower requirements: According to Sharma (2018: 202), many times the organisation may need totally new skills. In such eventualities,

it will be a better proposition to train promising workers from within the organisation in the new skills, rather than to go for fresh recruitment from outside the organisation.

- l. Beneficial to employees:** As employees acquire new knowledge job skills through training programmes, they increase their market value and earning power. The possession of useful skills enhances their value to their employer and thereby increases their job security. Training programmes may also qualify workers for promotion to higher and more responsible jobs. Obviously, this will increase their pay and status.
- m. Obsolescence prevention:** Training and development programmes foster initiative and creativity amongst employees and help in preventing manpower obsolescence which may be due to age, temperament or lack of motivation or the instability of a person to adapt himself/herself to technological changes.
- n. Helpful in gaining acceptance from peers:** Learning a job quickly and being able to pull their own weight is one of the best ways of gaining acceptance from one's own colleagues.
- o. Reduced labour turnover:** This suggests that employees who are properly trained by an organisation are less likely to leave that organisation.
- p. Beneficial to management:** Sharma (2018: 203) postulated that with the help of trained workers, a manager is in a better position to plan, organise, direct, and control his/her affairs more effectively because trained workers understand, cooperate, and involve themselves in the direction of the achievement of organisational objectives. With a trained workforce, executive efforts will tend to shift from the disagreeable need of correcting mistakes to the more pleasant task of planning work and of encouraging expert employees. Besides, trained workers are less likely to leave the organisation.

Training also helps in reducing the cost of production and increasing productivity and profits. In the light of the aforementioned, it can be

emphasised that training programmes in the workplace are important because workers must learn to adjust themselves to a new environment; increase and sharpen the skills they have; become understanding participants in organisational endeavours; and meet the challenges of changing conditions. Therefore, for performance, competitiveness and growth within an organisation, training programmes are a must/necessary, whether during economic slowdown or growth.

According to Sharma (2018: 203), training programmes have been widely accepted as a problem-solving device. Therefore, training programmes should be a top priority in an organisation dedicated to creating a learning environment. However, a successful organisation and managers must not view employee-training programmes as an expense, but as an investment in their people, although there should be a budget to cover learning activities in the same way that marketing activities are budgeted for in advance to cover advertisement expenses.

Thus, organisational performance and competitiveness can generate innovative opportunities for dependent/reliant businesses (petroleum industry value chain) to invest in their own growth and development. Any new investment in business development will require a skilled workforce and consequently, capacity development interventions for existing and new employees. Accordingly, various opportunities for job creation could contribute to economic growth and decrease unemployment, inequality and improve a community's lifestyle condition. In addition, economic growth could attract more foreign investments to the country, which can boost opportunities for more job creation. Nevertheless, successful training programmes in the workplace are conditional on the types and methods of training programmes to be adopted and implemented.

2.3.3.5 Nature of training programmes in the workplace

According to Sharma (2018: 213 - 214), the method of training programmes used in the workplace depends on the variety or types of training programmes that an organisation may adopt to develop the skills of its employees. Therefore, methods of training programmes in the workplace are selected and implemented by taking into account the training programmes, which cope with the requirements and expectations of the organisation. This is done in relation with targeted employees and/or field of activities. These methods as presented in Table 2.12 involve on-the-job and off-the-job methods of training programmes. According to Johnson (2018: 1), on-the-job training methods enable trainees to acquire knowledge and experience over a period while they perform their regular duties.

This method of training targets mainly employees who have low academic qualifications or who do not possess the academic qualifications needed for their jobs. Therefore, on-the-job training is highly effective as it involves activities that enable employees to learn new roles and responsibilities. It provides employees with the skills and knowledge to meet the demands of prospective customers and other stakeholders. Training programmes enables employees to become familiarised with the instruments and materials that they will be using in the workplace. However, according to Sharma (2018: 200) and Johnson (2018: 2), the on-the-job method or technique involves job directives given by an employee's manager or senior colleague who is talented and experienced. Hence, managers or supervisors are expected to have good training understanding and skills to produce a productive employee.

Additionally, Jonson (2018: 2) emphasised that on-the-job technique can strengthen manager-subordinate relationships, sustain a positive motivational effect and above all improves performance and offer managers the opportunity to take practical steps within a particular job context to attend to a specific need of the organisation prior to resorting to external methods, if necessary. Therefore, on-the-job training techniques can be most useful when employees are promoted and take up a new position; when productivity decreases; when there is a need for employees to specialise in a particular skill; or when there is a need to improve the skills and knowledge that deal with the demands of the job.

Thus, it can be stated that well-trained employees are expected to be more competent, creative, innovative, effective, and more useful. Training can provide them the opportunity to take control of their jobs hence boosting organisational performance and productivity. Comparatively, off-the-job training is therefore a method or technique of training that takes place outside the actual work environment of an organisation. According to Sharma (2018: 201-203) and Johnson (2018: 2), off-the-job training is usually executed in a setting particularly chosen for it an environment other than the normal work environment, which may or may not be near the actual work environment. Professionals and academicians at a designated site/place usually provide it. Off-the-job training techniques include lectures, seminars, workshops, simulation, programmed instruction, tele-conferences, discussions and so forth. These offer participating employees the opportunity to meet new people in the same field, which gives them the chance to compare issues and discover new ideas (Johnson, 2018: 2).

Off-the-job training concentrates on learning rather than performance and conveys theoretical knowledge and behaviour. However, while on-the-job training allows developing best practices for a particular job, off-the-job training aims to improve basic competencies that are more general in nature. This method or technique is suitable for training managerial-level employees. Therefore, the disadvantage of off-the-job training is that it has the potential to disrupt work activities (Johnson, 2018: 2). In addition, it is more expensive than the on-the-job training method as it requires an environment other than the workplace and experts are employed to conduct the training. Nevertheless, off-the-job training provides the opportunity for trainees to pay more attention to the material taught. Learning outside the work environment allows trainees to think and reflect and broadens their skills more than on-the-job training.

Trainees are therefore able to ask questions and meet others in their field of work. According to Sharma (2018: 215), the best practice of training programmes from these two methods/techniques could benefit the organisation in one way or another in terms of performance and productivity and in terms of vision, mission, goals, objectives, values, policies, strategies, procedures, rules and regulations achievement and sustainability. It can also lead to various socio-economic impacts, namely skills, abilities, knowledge, work behaviour, attitude, motivation, confidence, and morale improvement of employees.

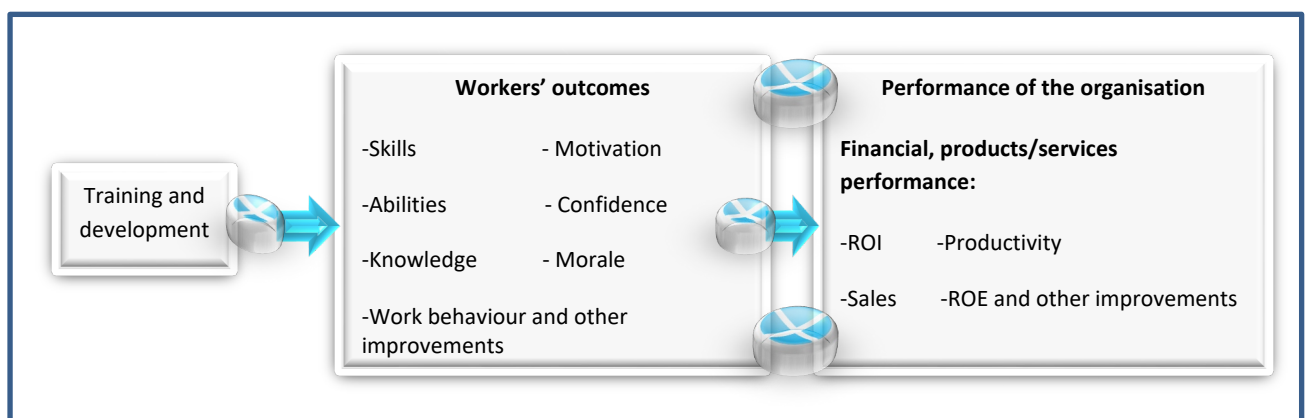
In addition, in the best practice of training programmes also can promote the organisation in terms of its financial performance, namely return on investment (ROI), sales, productivity; return on equity (ROE), as well as on non-financial indicators such as absenteeism, the role of labour turnover and grievances (Sharma, 2018: 215). Considering the aforementioned, the right type or method of training programmes to be implemented in the workplace could be a key factor to organisational change or development. Therefore, according to Puttewar (2016: 433), organisational innovation, performance and productivity are the main targeted outcome of any training programmes that can be adopted and implemented by an organisation. It is also suggested that a successful organisation is one which can create an environment where the potential of each employee is realised and actively applied in achieving the objectives of an organisation.

Moreover, the level of employee engagement and the quality of work are directly associated with the success of an organisation and contributes towards its growth (Puttewar, 2016: 433). Therefore, capacity development interventions are always concerned with identifying ways to boost the skills of employees, increase productivity, and gain competitive advantage. Consequently, productivity and the quality/quantity of products/services to be injected in the economy can contribute to socio-economic transformation in the country. It was indicated that factors that can “PULL” capacity development interventions in the organisation and “PUSH” organisational innovation, performance and productivity are either external or internal factors. According to Puttewar (2016: 433), these factors can also be named controllable or internal factors and non-controllable or external factors. However, the controllable (internal) factors include elements such as product, technology, plant and equipment, materials, human capacities, work methods, management style, financial factors, and sociological factors.

The non-controllable (external) factors include components such as natural resources, government policy and infrastructure. From the aforementioned factors, human capacities development is a major factor that influences organisational performance and productivity. Thus, organisational success and growth is an important factor of socio-economic transformation, given that there is most often a direct, indirect, and induced link-effect between a developed organisation and many other socio-economic

activities of related or dependant organisations. For example, improving the quality of products or services is related to human capacity development, which in turn contributes to organisational expansion, creates a large opportunity for job creation, and generates possibilities to reduce inequality and poverty in the country. Puttewar (2016: 433 - 434) also iterates the benefits of human capacity development, namely increasing productivity; improving teamwork; increasing the quality of service; delivering superior value to customers; increasing performance; and promoting job satisfaction (happiness/joy/pleasure of employee). Sharma (2018: 214) contends that the basic need and objectives of human capacity development (training programmes) for a particular level differ from that of other level. The determining factors would then be the level of an individual in the organisation and his/her own personality characteristics. Figure 2.11 indicates the relationship between training programmes, workers' outcomes, and organisational performance.

Figure 2.11 Relationship between training programmes, workers' outcomes, and organisational performance.



Source: Adapted from Sharma (2018: 215)

Figure 2.11 describes the kind of relationship or the impact of training programmes on organisational performance and development as well as the effect of training programmes on employees' level. Sharma (2018: 214-215) postulates that in assessing the suitability of training programmes, the entire personnel of an organisation may broadly be classified into three levels, namely rank and file employees, supervisory level, and management level.

1. **Rank and file employees:** In this level, most extensive of all training programmes are designed to meet the needs of rank and employees. Employees may require training at the time of entry or at the subsequent time to keep pace with the technological development. Here, training programmes may involve a single job, but for many types of related jobs that may be given to workers subsequently. In this case, retraining or refresher courses may be given as a means of avoiding personnel obsolescence.
2. **Supervisory level:** In this level, candidates for frontline supervisory positions and incumbent supervisors need the same kind of training opportunities. People in this level need to know how to develop and carry out approved programmes within a budget to obtain and use service and staff help, and to meet the requirements of their superior managers.
3. **Management level (Top and middle managements):** In this level, training programmes involve both middle management and top management. Training programmes mostly include knowledge of management theory. Table 2.15 indicates the kind of training programmes at each management level:

Table 2.15 Training programmes at different management levels

Rank and file employees	Supervisory levels	Management level	All levels
- Job training - Apprenticeship - Pre-employment training - Retraining	- Supervisory skills training - Coaching - Special course and classes - Conferences - Job rotation - Brainstorming - Case studies -Special projects and task forces - Simulation: role-playing - Sensitivity training	- Coaching - Special courses and classes - Conferences - Job rotation - Brainstorming - Committee assignments - Selective reading - Understudy - Case studies - Multiple management -Simulation: role-playing and gaming - Sensitivity training	- Job experience - Introduction and orientation

Source: Self-generated by the researcher, based on Sharma (2018: 216- 217)

Table 2.15 indicates specific training programmes which may be recommended to any organisation, including the petroleum industry, for employee skills training and/or skills development at various levels. According to Sharma (2018: 205), on understanding of the training programmes as shown in Table 2.15 involves on-the-job training and the off-the-job training programmes/approaches. Therefore, on-the-job training involves methods that include training on a specific job or position or job rotation, special projects, and multiple managements. Furthermore, off-the-job training comprises methods such as special courses and lectures, conferences, case studies, brainstorming, laboratory training and many more (Sharma, 2018: 205). However, both on-the-job and off-the-job training are approaches that can be used to boost a positive influence on the performance of employees, as it enhances job involvement and the higher productivity of the organisation.

Additionally, the two approaches are crucial for maximising organisational profit, growth, competitiveness and provide quality products/services to consumers. Therefore, as stated earlier, capacity development interventions can increase employees' abilities to consequently grow and improve the flow of quality products/services in the economy. Yet, a successful organisation is one that promotes employees' capabilities and contributes to other business expansion, growth, and development. Socio-economic transformation is therefore the outcome of public and private investments in human capital development and of policies that support employees' skills development. Case studies on the international petroleum industry clarify and indicate the possible impact that outcomes and outputs of capacity development interventions have had in the petroleum industry, as well as the socio-economic effects achieved. Thus, organisational performance, productivity, growth, and development are an essential key to economic growth and to community lifestyle change/improvement.

2.3.4 Conclusion

Overcoming the challenges of skills shortages and envisaging organisational competitiveness in the 21st century requires organisations to develop employees' talent. Therefore, if organisations have to compete successfully in a dynamic global economy, workers/employees have to be skilled or able to make decisions and implement changes quickly. A capacity development interventions perspective in the petroleum industry is a significant factor in determining the returns to employers providing employee training and education in the workplace and remains an integral part of the pursuit of improved growth and productivity. The investment in employee capacity development is more significant in the present day than ever before, as the ability to compete depends on skills development and on how well that skills/knowledge can be managed and utilised.

Therefore, competencies are needed to survive in the 21st century. However, the goal of capacity development interventions/programmes is to enhance constant skills/knowledge acquisition and innovation. Organisations should therefore create a situation where knowledge is developed and shared to promote, achieve, and sustain their visions, mission, goals, values, strategies, policies and so forth. Thus, Johnson (2018: 1) posits that it is widely acknowledged, that training and education in the workplace helps to develop employees' skills, enhance the quality of their work, improve productivity, and build employee loyalty to an organisation. It is also indicated that inadequate initial training, poor orientation to the job and a lack of on-going training and education in the workplace can be considered amongst the major factors/challenges contributing to high skills shortages in many organisations.

However, well-trained employees are more skilful and useful to become more productive, take control of their jobs and increase organisational performance, productivity and even reputation. Imperatively, organisations that perform well are these that are competitive in terms of employees' skills development and in terms of adapting themselves into new technologies (innovation and creativity). These organisations are therefore the locomotive of socio-economic transformation (economic growth and social change). Therefore, the higher the level of organisational investment in employees' capacity development, the more committed employees will

(in return) be to the organisation. Training and education initiative were found to have the potential to positively influence employees' motivation for them to contribute to organisational success. The next chapter explores capacity development programmes and socio-economic transformation.

CHAPTER 3

CAPACITY DEVELOPMENT PROGRAMMES AND SOCIO-ECONOMIC TRANSFORMATION

3.1 Introduction

Countries and organisations these days are in a continual state of change or transformation. Some of these countries or organisations are in continual socio-economic retrogression due to the lack of appropriate policies or approaches implementation in tackling issues that require change, while some others are in the progressive quest of finding suitable strategies that create opportunities for socio-economic change and transformation. Without a doubt, the ambition for radical socio-economic transformation and aspiration for competitive organisations require new strategies. There are critical issues such as global competition, new information, communication technologies, the changing demographics of the workforce and shifting value systems, which are compelling or driving organisational change (O'Connor, 2007: 293). These issues need new approaches or policies. Amongst various existing approaches that can be used to bring radical change in how work is done whether in the institutional or organisational sectors, capacity development programmes seem to be the most indispensable tool.

According to Zino (2014: 9), working to produce the necessary competitiveness, organisations must learn from previous and existing knowledge and make effective decision on what actions to undertake to create sustainable organisational competitive advantage. Therefore, capacity development interventions (actions) could be a key approach to create organisational competitive advantage. In addition, Folscher (2006: 35) posits that capacity development programmes appear to be helpful in supporting human skills development through which organisations can improve the quality of its human resources for future progress, performance, and prosperity, especially in the face of global competition. Furthermore, the capacity development programmes approach to human capacity development can be essential in meeting skills challenges (skills shortages) when organisations strategically invest in the skills development of their employees.

Additionally, capacity development programmes can be a useful tool to identify skills needs and priorities and to conduct a skills audit (a process for identifying critical and scarce skills and to compare them to the skills required by the organisation so that the shortfall or surplus of key skills can be determined and addressed). Moreover, it can also be useful to conduct a skills gap analysis, as well as to sustain a management development framework. Capacity development programmes as a vital tool to human capacity development, petroleum industry performance and socio-economic transformation ensures that skills development provides ways to support the fulfilment of business objectives. Employees with the requisite skills are key to the achievement of the business objectives. Skills audits or analyse are therefore fundamental instruments for capacity development programmes to evaluate or determine whether an organisation has the skills required to achieve its business goals, for succession planning or for restructuring and re-deployment.

A skills gap analysis also requires an audit of the critical skills and knowledge that the organisation needs, as well as the skills and knowledge that the organisation currently has (Folsher, 2006: 24). The aspiration for organisation performance and competitiveness is an additional incentive, which should motivate organisation to develop themselves and their human resources by equipping employees with competencies in terms of skills priorities that are based on its strategic business goals and needs. Folsher (2006: 35) describes the overall purpose of capacity development programmes (skills training and skills development programmes) in two dimensions. Firstly, the purpose of capacity development programmes is to ensure that the organisation's human resources have the skills and knowledge necessary to meet performance and quality standards, and secondly, to develop employees' career and personnel potential to meet their growth as well as the future human resource needs of the organisation.

According to Folscher (2006: 8), capacity development programmes in the petroleum industry can play various essential roles. Therefore, the most valuable impacts of capacity development programmes in the petroleum industry include promoting sustainable growth, development, and equity, promoting and accelerating quality training for all in the workplace. In addition, capacity development programmes can play the role of promoting employability and sustainable livelihoods through skills development, assisting designated groups (including new entrants) to participate in

accredited work, integrated learning, and work-based programmes to acquire critical skills to enter the labour market or create self-employment, and improving the quality and relevance of provision. However, the key constraints that can possibly hamper achievement in terms of skills development imperatives could be the lack of awareness of policies and a lack of understanding of the legal, theoretical, and economic background to skills development (Folscher, 2006: 3). Organisational change or radical socio-economic transformation in any country inevitably needs innovative skills programmes that lead to the definition of new jobs with new skills requirements, which in turn demands new investments in human skills development. The South African petroleum industry, which is facing challenges in terms of skills shortages or in terms of human technical skills development, will need capacity development programmes usage for human capacity development (SAPIA Report, 2016: 6). However, currently, the shortage of technical skills affects the South Africa's petroleum industry's performance and development.

According to the South African Department of Energy Report (2010), the petroleum industry requires certain high-level skills that are in general inadequately provided in the South African labour market. It is further stated that emerging companies are especially under-skilled, and many organisations face the challenge of finding appropriately trained graduates with complex problem-solving skills, critical thinking, good judgement, and decision-making, as well as cognitive flexibility. However, a key driver in their success could be to accelerate capacity development. Research was conducted across petroleum companies to quantify and understand the extent of scarce and critical skills issues which needed learning interventions to breach these industry-identified skills shortages. The findings indicated that petroleum industry employers have revealed a desire for a more skilled workforce (SAPIA Report, 2012).

Therefore, skills development at the workplace in any organisation and mainly in the South African petroleum industry, remains an imperative or a necessity for current and future performance and development perspectives. Yet, capacity development programmes, which support and provide a convincing and enticing initiation into certain area of skills development (knowledge and practice) is at the heart of what makes human development results sustainable over time (UNDP, 2009: 3).

Consequently, capacity development programmes (skills training programmes) could be useful and appropriate key tool in tackling the issue of skills shortages in the South African petroleum industry. Capacity development programmes as a key approach to improving and developing the capability of workers and managers in the petroleum industry needs to be strategically well-defined. Therefore, specific and quality skills training programmes are delivered to empower employees to improve their skills/performance and contribute effectively to petroleum industry development and socio-economic transformation in the country. Thus, for a better understanding of the role that capacity development programmes could play in the petroleum industry and for socio-economic transformation in the country, Table 2.2 in the Chapter Two provides and describes the relativity between capacity building and capacity development programmes. In addition, the definition, meaning and description of concepts related to capacity development programmes are provided in the sub-sections below.

3.2 Capacity

Capacity can be defined and understood as the ability of people, organisations, and society as a whole to manage their affairs successfully (Buss, 2010: 6). Goosby (2012: 3) described capacity as the ability of individuals and organisations or organisational units to perform functions effectively, efficiently, and sustainably. This implies that the aptitude, capability, ability, or competence to manage and perform affairs and functions efficiently is the task and responsibility of human capital potential (skills). Therefore, specific programmes need to be built, developed, and applied effectively for potential human capacity development.

However, an organisation that has talent/capacity in human capital as well as opportunities for change, innovation, transformation, and organisation that care about capacity enhancement care also about being flexible and strong in competition with incentive for sustainability. Thus, capacity is a constructive, active, dynamic, vital, and practicable concept that consists of a coordinated, participatory process that engages individuals, organisations, and communities to develop and strengthen skills that increase their self-sufficiency.

3.3 Capacity building

According to Amadei (2020: 4), capacity building consists of building human, institutional and infrastructure capacity to support societies improve/develop secure, stable, and sustainable economies, governments, and other institutions through mentoring, training, education, physical projects, the infusion of financial and other resources, and most importantly, the motivation and inspiration of people to improve their lives. Capacity building encompasses the country's human, scientific, technological, organisational, institutional and resource capabilities (Buss, 2010: 6). Capacity building is an evidence-driven process of strengthening the abilities of individuals, organisations, and systems to perform core functions sustainably, as well as to continue to improve and develop over time (Goosby, 2011: 3). According to UNIFEM (1994: 19), capacity building in the African context should refer to the process of building required skills and knowledge, and to promoting the effective utilisation of skills already developed.

Moreover, capacity building involves both individual and institutional issues of capacity-development. At the individual level, the main issue involves the acquisition of appropriate skills and knowledge, as well as ensuring a competent professional standard of performance. At the institutional level, capacity-building efforts have to address the issue of individual capacity utilisation and retention. Implicitly, capacity building seems to be a process that culminates an individual or organisational goals achievement. Buss (2010: 8) indicated that capacity building is a long-term, continuing, and complex process that depends on the participation and constant interaction between all involved stakeholders (national and local governments, non-governmental organisations, academic institutions, etc.).

From the institutional/organisational point of view, capacity building through skills training in the right field can be regarded as the most important factor in securing the job initially, as well as the ability to develop and utilise the skills necessary for survival in corporate management (UNIFEM, 1994: 22). Therefore, in light of the above mentioned, capacity building should firstly address issues of the appropriate identification of key institutions (such as policy development and management), the necessary/relevant technical skills and the training of a critical number of employees to be placed in these institutions. It also assists in identifying mentors in the relevant

institutions under whom the employees could be placed. It is also indispensable to note that capacity building in the petroleum industry should involve the training of mentors in the art of mentoring and the systematic training of employees should comprise programmes related to the specific skills needed, including understanding, and speaking the corporate language and culture. The petroleum industry necessitates skills identification other than technical ones that will have to thrive in the immediate environment (UNIFEM, 1994: 22-23). Thus, a fundamental goal of capacity building is to enhance the ability, to evaluate and address crucial questions related to policy choices and modes of implementation amongst development options, based on an understanding of environment potentials and limits and of needs perceived by the organisation or the people of the country concerned (Buss, 2010: 6).

3.4 Capacity development

The UNDP (2008: 8) defined capacity development as the process through which individuals, organisations and societies obtain, strengthen, and maintain the capabilities to set and achieve their own development objectives over time. If capacity building encompasses the country's human, scientific, technological, organisational, institutional and resource capabilities, capacity development is therefore an endogenous process of improving individual skills and abilities, ensuring organisation that are productive and creating institutions that optimise the utilisation of human, financial and physical resources for attaining individual, organisational, institutional, and societal goals (Buss, 2010: 8). This implies that *capacity development* mostly refers to both the process of creating and building capacities as well as supporting the emergence of new or stronger capacities and performance improvements.

Capacity building commonly refers to a process that supports only the initial stages of building or creating capacities and alludes to an assumption that there are no existing capacities to start from. According to UNDP (2008: 5), the building of individual skills may take several years, and societal transformation may take generations. Therefore, capacity development shall be seen as a sustainable process of improving existing individual skills and societal transformation over time. Thus, Buss (2010: 7) and UNDP (2008: 5-6) indicated that the concepts of capacity development and capacity building reflects the viewpoint that capacity resides within three levels, including the individual, organisational and enabling environment.

These levels can be identified as human resource development, organisational development and institutional or legal framework development. Moreover, efforts in assessing or developing capacity must take into account each level of capacity. Otherwise, it could become ineffective. Therefore, according to the UNDP (2008: 5-6), capacity development when regarded as a holistic system that works together, aims:

- **To enabling institutional and legal framework development:** Capacity development in this first level consist of making (and improving) legal and regulatory changes to create a supporting environment for organisations, institutions, and agencies at all levels and in all sectors to enhance their capacities. The enabling environment is the term used to describe the broader system within which individuals and organisations' function and one that facilitates or hampers their existence and performance. This level of capacity is not easy to grasp tangibly, but it is central to the understanding of capacity issues. It determines the rules of the game for interaction between and amongst organisations. Capacities at the level of the enabling environment include policies, legislation, power relations and social norms, all of which govern the mandates, priorities, modes of operation and civic engagement across different parts of society.
- **To enabling organisational development:** In this second level, capacity improvement comprises the elaboration of management structures, processes, and procedures, not only within organisations but also within the management of relationships between the different organisations and sectors (public, private and community). The organisational level of capacity improvement comprises the internal policies, arrangements, procedures, and frameworks as well that allow an organisation to operate and deliver on its mandate and that enable the coming together of individual capacities to work together and achieve goals.
- **To enabling human resource development or individual level:** Capacity improvement takes into account the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively. In this individual level, capacity refers to the skills, experience and knowledge that are vested in people. Each person is

endowed with a mix of capacities that allows them to perform, whether at home, at work or in society. Some of these are acquired through formal training and education, others through learning-by doing and experience.

In light of the aforementioned description, it is indicated that there is a complex interdependency between the three levels of capacity development. The framework conditions or enabling environment set at an institutional level influences the behaviour of organisations and individuals by means of the incentives it creates. Furthermore, organisations can be viewed as open systems that are constantly interacting with elements in their context, which can either stimulate capacity development or act as dis-incentives for capacity development (Buss, 2010: 8). Finally, the development of the capacities of individuals, as well as the possibilities to apply newly acquired skills highly depends not only on self-motivation and drive, but also to a large extent on the incentives created at institutional and organisational levels.

3.5 Capacity development best practices

Capacity development best practices can be better understood by way of reference to both capacity development and capacity building. The definitions and description of capacity building and capacity development as provided in the preceding sections will help to illuminate the essence of capacity development best practices. Capacity development usually refers to the process of creating and building capacities and their (subsequent) use, management, and retention. Capacity development process is driven from the inside and starts from existing (national) capacity assets (UNDP, 2008: 4-5). The UNDP (2008: 4) stated that capacity development and capacity building are interchangeable concepts. Therefore, the difference between both concepts is pointed out by the fact that capacity building generally refers to a process that supports only the initial stages of building or creating capacities and alludes to an assumption that there are no existing capacities to start from (UNDP, 2008: 4 and Bolger 2000: 1-2).

It is therefore less comprehensive than capacity development. The UNDP (2008: 5) argued that capacity building suggests a process starting with a plain surface and involving the step-by-step erection of a new structure, based on a preconceived design. Furthermore, capacity building can be relevant to crisis or immediate post-struggle situations where existing capacity has largely been lost due to capacity

destruction or capacity flight. Experience suggests that capacity is not successfully enhanced in this way. Sustainable capacity development programmes usage can promote human capacity development by continual skills training programmes. However, the reasons for using the concept of capacity development in this study are provided in the following sub-sections.

3.5.1 Rationale for using capacity development

Firstly, it is important to highlight that this study aims to explore capacity development programmes for socio-economic transformation in South Africa through the case study of the South African petroleum industry. It seeks to examine the critical factors affecting the effective implementation and use of capacity development programmes in the South African petroleum industry towards promoting human capacity development, which can be used as a key driver of petroleum industry performance and development, as well as socio-economic transformation. Therefore, one of the reasons justifying the usage of the capacity development concept in this study relates to the statement made by Kwame (2017) when explaining specifically the human capital model and the radical transformation of the South African economy.

The statement addressed the fundamental socio-economic problem underlying the persistence of inequality, poverty, and unemployment, which is not structural, but is rather character or personality traits in nature (of those who wield economic and political power), often referred to as human capital or human capacity. This implies that capacity development programmes aim to promote human capacity development and contribute directly or indirectly to institutional and organisational change, innovation, performance, and development as well as to socio-economic transformation. Furthermore, the human capacity development in the South African petroleum industry relates to the achievement of the Millennium Development Goals and other international and national development targets that hinge on the capacities of individuals, organisations, and societies to transform towards reaching their development objectives (UNDP, 2008: 3).

However, goals and objectives achievement involve the best practices of capacity development programmes. Without supportive strategies, policies, laws and procedures, well-functioning organisations and educated and skilled people, countries and organisations could lack the foundation needed to plan, implement, and review

their national and local development strategies. The foundation for capacity development focuses on making capacity development “work better” (UNDP, 2008: 3). Therefore, capacity development that promotes petroleum industry development and socio-economic transformation must involve the best practice or best usage of strategies, policies, laws and procedures, well-functioning organisations and educated or skilled people. In the case of the South African petroleum industry, making capacity development programmes work better (best practice) can contribute to solving the issue of skills shortages. On the contrary, the lack of capacity development best practice could result in both sustained skills shortages and negative human capital or human capital decay, which is a fundamental factor underlying widespread workforce skills deficiency, poverty, unemployment, and inequality (Kwame, 2017).

Additional effects related to the lack of human capacity development can include low productivity; a lack of competitiveness; weak initiative in terms of creativity and innovation; and a low/weak contribution to socio-economic transformation. Indeed, capacity development programmes and human capacity development are a *sine qua non* component of individual and social development, as well as of social cohesion, nation-building, and the progress of all societies for radical socio-economic transformation. Thus, in this study, the term capacity development is used based on the clarification, which depicts capacity development to be more comprehensive, since this best reflects its approach.

The approach to capacity development is premised on the fact that there are some capacities that exist in every context and that capacity development uses the existing base of capacities as its starting point and then supports organisational efforts to enhance and retain them. Capacity development best practice is therefore a process of transformation from the inside, based on organisational or institutionally determined priorities, policies, and desired results (Buss, 2010: 6). It encompasses areas where new capacities must be introduced and hence, the building of new capacity is soundly supported.

3.5.2 Global objectives of human capacity development in the petroleum industry

Human capacity development consists of a collective improvement of human assets that include attributes, knowledge, skills, inventiveness, life experience, energy, and enthusiasm, which are investments that people provide in the workplace (Hossain and Roy, 2016: 1024). However, human knowledge, skills, innovativeness, capabilities, and overall competence are necessary for goods and services that employees produce, which generate revenues. Therefore, capacity, capacity building and capacity development definitions and descriptions such as those discussed earlier depict the perception of improvement, change and transformation to the country's human, scientific, technological, organisational, institutional and resource capabilities.

Human capacities, skills, experience, knowledge, and abilities are what make an organisation to work effectively and efficiently. In light of the aforementioned, the United Way of Calgary and Area Report (2011: 4) denoted that human capacity could be built/developed at the individual as well as at community levels. Therefore, human capacity development can guarantee the best practice of knowledge that promotes wellbeing. Therefore, according to Buss (2010: 7) and the United Way of Calgary and Area Report (2011: 5), the global objectives of human capacity development (and capacity development best practice) suggest that individuals, groups, organisations, and communities must firstly increase their abilities to:

- Perform core functions, solve problems, define, and achieve objectives; and
- Understand and deal with their development needs in a broad context and in a sustainable manner.

However, the human capacity development strategy must be innovative for the petroleum industry development and for the country's socio-economic transformation process so that employees can develop the relevant and profitable skills necessary for achieving a desired outcome. Therefore, the government, which is accountable for promoting socio-economic growth or transformation in the country, is also responsible for supporting policies that target employment growth in key industrial sectors, including the petroleum industry. Whether in the public or private sectors, the best practice of capacity development for human capacity development is vital for

progressive change and transformation processes. According to Eade (1997: 24), capacity development best practice is about having awareness of the good practice of policies that contribute to the process of transforming lives and transforming societies. This suggests that capacity development in various sectors of the economy may contribute to reducing inequality amongst employees and increasing employees' level of competitiveness locally or internationally. Furthermore, capacity in all of its dimensions' highlights that the best practice of policies can contribute to helping people in any structure or system of work to be empowered with various skills (knowledge or capabilities) that enable them to bring about positive changes in their lives.

Additionally, the best practice of policies can also enable individual growth together with public action that can facilitate both the process and outcome of challenging poverty, unemployment, oppression, inequality and discrimination, and the realisation of human potential through socio-economic justice. Moreover, capacity development programmes are just one of the approaches that underpin the improvement of policies and best practice to perform intellectual, organisational, social, economic, political, cultural, material, practical or financial activities effectively or successfully. However, the expected positive outcomes from the capacity development process rely not only on the best practice of policies, but on the awareness of good practice of an existing framework within the organisation as well.

Therefore, the best practice of the capacity development framework will have to consider the fact of promoting the skills of the workforce by evaluating and addressing crucial questions related to policy choices and modes of implementation, potentials, and limits, as well as the needs perceived by the employees of a certain organisation (Buss, 2010: 6). According to the OECD (2015: 3), capacity development best practice requires a set of concrete actionable principles to boost skills and their use. Furthermore, the set of concrete actionable principles includes a skills strategy on human resource development, skills for improved productivity, employment development, as well as the training strategy to be developed for and adopted. Furthermore, the OECD (2015: 3) indicated that the purpose of these actionable principles is to:

- Reaffirm the importance of a well-functioning and well-resourced education and skills system for promoting strong and inclusive growth;
- Underscore the importance of policy coherence through a whole-of-government approach with full stakeholder engagement; and
- Identify actions that both the petroleum industry and the government could take to improve the contribution of skills to stronger and more inclusive growth.

Table 3.1 below highlights possible policy principles and indicators for measuring progress from the best practice of capacity development programmes.

Table 3.1 Skills strategy: Policy and indicators

Policy principle	Indicator for measuring progress
A. Developing skills for work and life	
▪ Strengthen access to quality skills training programmes ▪ Develop strong foundation skills ▪ Provide employees with the skills needed to ensure better performance at work ▪ Actively promote quality work-based learning ▪ Foster the stronger engagement of social partners in skills policies	- Increased provision of quality apprenticeships and other forms of work-based learning (as a percentage of all workers), - Increased mechanisms for social partners to provide advice on current and future skills needs and the education and training programmes required to meet these needs.
B. Encouraging firms to invest in skills development	
▪ Foster employers' investment in quality training, focusing on the petroleum industry ▪ Encourage investment in skills through shared public-private financing, especially for low-skilled workers ▪ Improve training opportunities for informal workers ▪ Promote job stability to increase access to work-based training ▪ Encourage firms to move up the value-added chain and increase the use of more highly skilled workers	Increased provision of training in the petroleum industry Increased incidence of training for low-skilled workers Increased incidence of training for informal workers Reduced incidence of precarious jobs Increased share of jobs requiring higher skill levels
C. Ensuring that skills are fully used	
▪ Activate skills by improving work incentives and job-search help, by removing employment barriers ▪ Systematically anticipate, assess and Respond to changing skill needs ▪ Encourage managers, particularly in the petroleum industry, to use available skills more fully ▪ Ensure that labour market settings lower the skills mismatch	Increased participation rates of under-represented groups Strengthened systems for the collection and use of information on skills demands Increased levels of skills utilisation Reduced incidence of skills mismatch

Source: Adapted from OECD (2015: 4)

As illustrated in Table 3.1, it is acknowledged that capacity development best practice involves an awareness of the effective implementation of policies and the useful employment of skilled human resources that might contribute to the expected change,

transformation, and development. Therefore, failures in promoting capacity development programmes and failures in the effective implementation of policies and the usage of skilled human capital can be significant barrier to petroleum industry development and socio-economic transformation. According to Buss (2010: 8), failures in implementing capacity development programmes are mainly found in non-technical reasons and are very often related to the lack of awareness and lack of capable human resources. According to the UNDP (2008: 5-6), there are some factors/barriers in any organisation that may contribute or affect the best practice of capacity development. From the organisational point of view, these factors can be identified as internal or external barriers.

According to Buss (2010: 8), generally, external, and internal factors susceptible to promoting or obstructing capacity development best practice include policy, institutional, legal, regulatory, economic, and financial, informational, and technological elements. However, the external factors are those relative to the enabling environment, which involve policies, legislation, power relation and social norms; while the internal factors include aspects relative to the organisational environment, which involve internal policies, arrangements, procedures, and frameworks. Additionally, individual experience, knowledge and technical skills can also be considered as internal factors, which can promote or hamper the best practice of capacity development (UNDP, 2008: 5-6).

According to the United Way of Calgary and Area (2011: 5), organisational capacity development seeks to strengthen the ability of an organisation to achieve a desired outcome. Therefore, in this study, capacity development can be understood as a tool that supports organisations to develop and maintain the skills, infrastructure, and resources in achieving their mission. Efforts to effectively support organisations in achieving their defined mission and goals is necessary to understand the components of organisational effectiveness. Thus, skills development or technical capacity development is one of the most important components of the organisational effectiveness. The following section discusses the foundation of skills development perspectives in the petroleum industry.

3.6 Foundation of skills development perspectives in the petroleum industry

Skills are a foundation of decent work (International Labour Office, 2010: 1). Moreover, training or skills development is about covering the full sequence of life stages and gives each individual a basis for the development of their potential laying the foundation for employability. However, the initial skills training provides core work skills, general knowledge and industry-based and professional competencies that facilitate the transition from education into the world of work. From the aforementioned points, the International Labour Office (2010: 1) indicated that capacity development programmes involve lifelong learning by maintaining individuals' skills and competencies as work, technology and skill requirements change. Therefore, several organisations and countries should be focussing on skills development as they see relative strengths and weaknesses in their own skills development systems, and as they learn more about innovation and experience in other countries.

According to Williams (2016: 204), skills development at the workplace consists of developing qualified workers. It is also indicated that skills development is a typical investment in employee training, which increases productivity, reduces employee turnover, and makes companies more profitable. Furthermore, capacity development programmes can give employees the knowledge and skills they need to improve their performance and provide employees with formal feedback about concrete and tangible job performance (Williams, 2016: 204). However, technical capacity development or technical skills training means providing opportunities for employees to develop job-specific skills, experience and knowledge which enable them to do their jobs or improve their performance. According to Williams (2016: 204), American companies spend more than \$60 billion a year on skills training. In the case of the South African petroleum industry, which is experiencing a challenge of skills shortages, a skills training needs assessment could be necessary to identify and prioritise the learning needs of employees.

The needs assessments can be conducted by identifying performance or deficiencies, listening to employees' complaints, surveying employees and managers or formally testing employees' skills and knowledge. In addition, all possible actions to be put in place towards tackling the issue of skills shortages must start with a skill needs assessment before deciding about the appropriate skills programmes and the area of

specific skills training. However, the assessment methods in tackling the skills shortages issue in the petroleum industry could comprise a number of training methods, which can facilitate capacity development programmes to be successfully and profitably implemented. These methods may include films and videos, lectures, planned reading, case studies and monitoring, group discussions, on-the-job training, role-playing, simulations and games, vestibule training, computer-based learning and many more (Williams, 2016: 204). Therefore, the best method to fit skills shortages or to solve it must be relevant to the training needs/objectives, which is to impart information or knowledge to trainees. For the specific case study of the South African petroleum industry, the convenient methods for problem-solving skills (solving skills shortages problem), could include methods that involve case studies, coaching and mentoring, group discussion and lectures.

Once again, the choice of any methods for problem-solving skills in the petroleum industry should be referring specifically to the skills training needs/objectives of the employees within the organisation. Table 3.2 provides a better understanding of skills training objectives and methods. However, socio-economically, skills training programmes are necessary for improving human capital ability, which is indispensable for increasing organisational productivity and employees' self-development. In addition, Seleane (2001: 34) stated that it is constitutionally and socio-economically profitable for public and private institutions to invest in human capacity development and to provide vocational guidance and training programmes and techniques with a view to ensuring full and productive employment.

Furthermore, Liebenberg (2010: 34-35) and Seleane (2001: 34-35) indicated that workplace skills training programmes involving vocational guidance and technical training programmes provide opportunities for fair wages and equal remuneration for work of equal value; equal opportunity for promotion in the workplace; opportunities to take part in administrative action; and access to information on progressive education and in cultural life. However, in the light of the aforementioned, skills development perspectives in the petroleum industry underpin not only the awareness to human capital competencies or skills development, but also of improving productivity and the general condition of the concerned organisation.

Table 3.2 Skills training objectives and methods

Skills training objectives	Skills training methods
Impart Information and Knowledge	- Films and videos share information, illustrate problems and solutions, and effectively hold trainees' attention. - Lectures: Trainees listen to instructors' oral presentations. - Planned readings: Trainees read about concepts or ideas before attending training.
Develop Analytical and Problem-Solving Skills	- Case studies: Case studies are analysed and discussed in small groups. The cases present a specific problem or decision, and trainees develop methods for solving the problem or making the decision. - Coaching and mentoring. Coaching and mentoring of trainees by managers involve informal advice, suggestions, and guidance. This method is helpful for reinforcing other kinds of training and for trainees who benefit from support and personal encouragement. - Group discussions: small groups of trainees actively discuss specific topics. The instructor may perform the role of discussion leader.
Practice, Learn or Change job Behaviour	- On-the-job training (OJT): New employees are assigned to experienced employees. The trainee learns by watching the experienced employees perform the job and eventually by working alongside the experienced employee. Gradually, the trainee is left on his or her own to perform the job. - Role-playing: Trainees assume job-related roles and practice new behaviours by acting out what they would do in job-related situations. - Simulation and games: Experiential exercises place trainees in realistic job-related situations and give them the opportunity to experience a job-related condition in a relatively low-cost setting. The trainee benefits from hands-on experience before performing the job, where mistakes may be costlier. - Vestibule training: Procedures and equipment similar to those in the actual job are set up in a special area called a "vestibule." The trainee is then taught how to perform the job at his or her own pace without disrupting the actual flow of work, making costly mistakes, or exposing the trainee and others to dangerous conditions.
Impart information and knowledge; Develop Analytical and Problem-Solving Skills; and Practice, learn or Change Job Behaviours	Computer-based learning: Interactive videos, software, CD-ROMs, personal computers, teleconferencing, and the Internet may be combined to present multimedia-based training.

Source: Adapted from Williams (2016: 205)

Table 3.2 explains the skills training objectives and method for in the workplace. Therefore, skills training programmes can be conducted following four essential ways. According to Williams (2016: 206), these objectives and methods include the following:

- Employees' reactions: knowing how satisfied trainees were with the programmes;
- Learning programmes: knowing on how much employees improved their knowledge or skills;

- Behaviour: evaluating how much employees changed their on-the-job behaviour because of the skills training programmes; and
- Results: evaluating how much training improved job performance, such as increased product quality, increased productivity, or decreased costs.

From the aforementioned understanding, capacity development programmes best practice (skills training programmes) can provide meaningful benefits for companies which are operating in the petroleum industry and for the entire petroleum industry transformation. If not, then the expectation for development and transformation can be insignificant. Williams (2016: 206) stated that a study by the American Society for Training and Development shows that a training budget as little as \$680 per employee can increase a company's total return on investment by six percent. Skills training programmes and skills training methods point out that improved understanding about the components of organisational effectiveness can support efforts towards effective capacity development best practices.

According to the United Way of Calgary and Area Report (2011: 5), the framework covering the components of organisational capacities development comprise four key areas, namely leadership capacity development, management capacity development, technical capacity development and adaptive capacity development. However, skills development or technical capacity development programmes will have to take into account an organisation's components and sub-components towards influencing transformation or sustainable development. These components and sub-components cover various aspects of the requested capacity development within the organisation. The following section discusses different areas or components targeted by capacity development programmes in the petroleum industry.

3.7 Different areas or components targeted by capacity development programmes in the petroleum industry

According to Amadei (2020: 3), capacity development can be applicable to individual, social, natural, and economic categories of capacity. Therefore, in the country as a whole or petroleum industry (field of engineering) particularly, there are six pillars of capacity development, which must always be in place if an organisation or country

stands to have sufficient and stable technical and decision-making capacity to meet the prerequisites of sustainability. The six pillars include individual, institutional, technical, decision-making, business, and resource and supply capacities (Amadei, 2020: 3). The United Way of Calgary and Area Report (2011: 6), Buss (2010: 9) and the UNDP (2009: 13) suggested that capacity development programmes in the petroleum industry or in any other organisation and institution should target and include areas such as:

- **Functional Capacities (FC):** Functional capacities development are crosscutting capacities that are relevant across various levels and are not associated with one particular sector or theme. They are the management capacities needed to formulate, implement, and review strategies, programmes, and projects. Since they focus on getting things done, they are of key importance for any successful capacity development. These capacities are the ones that companies are most likely to target as part of capacity investment.
- **Leadership Capacity Development (LCD):** Leadership capacity development involves training programmes that enhance the ability of all organisational leaders to create and sustain the vision, inspire, model, prioritise, make decisions, provide direction, and innovate, all in an effort to achieve the organisational mission (United Way of Calgary and Area Report, 2011: 6 and UNDP, 2009: 13). This includes capacities such as:
 - **Governance Capacity Development (GCD):** This involves the overall processes and structures used by the board to direct and manage an organisation's operations and activities.
 - **Internal Leadership Capacity Development (ILCD):** This refers to those organisational leaders outside of the board and their ability to apply a mission-centred, focused, and inclusive approach to making decisions and motivating people to act on those decisions.

- **Capacity Sustainability (CS):** This is the organisation's ability to cultivate organisational leaders, avoid over-relying on one leader and to plan for leadership transition.
- **Management Capacity Development (MCD):** Management capacity development involves the ability of an organisation to ensure the effective and efficient use of organisational resources. Essentially, this means an organisation's capacity to serve more constituents more effectively. Included here are capacities such as:
 - **Human Resources Capacity Development (HRCD):** This area includes all capacities related to employee management, such as the assessment of staff performance managing performance expectations; programme staffing; staff development; salary; and benefit administration and relevant policies and procedures. It is important to note that Human Resources capacity development refers to the ability of the organisation to recruit, train, retain and reward employees. For many organisations, this can be a critical component of their overall human resource strategy.
 - **Financial Management Capacity Development (FMCD):** FMCD refers to the ability to manage and deploy organisational revenues and assets to ensure efficient operations.
- **Technical Capacity Development (TCD):** The term refers to whether the organisation has the skills, tool, and facilities to deliver its programmes and manage its operations. Specific capacities of focus include:
 - **Programme Design and Evaluation (PDE):** This involves the ability to design and implement an effective evaluation. PDE refers to the technical skills of developing a proper design for the programme and a relevant programme logic model or other evaluation tool that can measure the effectiveness of programming. This is different to utilising

the results of the evaluation for possible on-going learning and improvement. The concept of evaluation, whether programmatic or organisational, for on-going learning is a separate area of capacity.

- **Fundraising Skills Development (FSD):** FSD involves the ability to procure the financial and in-kind resources necessary for efficient operations.
 - **Marketing skills development (MSD):** MSD involves the ability to communicate effectively with both internal and external stakeholders.
 - **Technological Capacity Development (TCD):** This process involves having the necessary/performing resource capacity such as equipment, systems and software needed to efficiently operate the organisation.
 - **Technical Skills Development (TSD):** This involves the ability to run efficient operations. That is the ability to use the knowledge or techniques of a particular discipline.
-
- **Behavioural Capacity Development (BCD):** This is based on improving or developing awareness, preparedness, practice, and maintenance of innovative behaviour (constructive/productive conduct and actions that contribute to the performance and development of socio-economic activities). Behavioural capacity development refers to developing positive behaviour, promoting, and perpetuating the best behaviour for individual, organisations and society; as well as developing approaches designed specifically to facilitate efforts that empower community based on structure of values, priority of need, and organising community to conduct responsibly and consciously socio-economic programme by itself (Kriyantono, 2013).

According to Kriyantono (2013), functional, technical, or behavioural capacities development consist of strengthening community's capacity to regulate and govern their own values and priorities, and to organise themselves to act on these.

Capacity development involves sustainable improvement of the capability of community's, organisations, and institutions to advance or increase their competence and problem-solving capacities. Amadei (2020: 3) specified that capacity development take into consideration various connotations that may include the capabilities, talents, abilities, skills, understandings, attitudes, values, relationships, behaviours, motivations, resources, and conditions that enable individuals, organisations, networks/sectors, and broader social systems to carry out functions and achieve their development objectives over time. Moreover, according to the International Finance Corporation (IFC) Report (2014), technical, functional, and behavioural capacities development could be associated with particular areas of expertise and practice in specific thematic areas or sectors. In the petroleum industry, technical skills development may closely relate to a sector or programme focus.

In other areas or sectors, such as small business training, education, health, or agriculture; capacity development may include programmes related internet-based instruction, training and workshops, technical assistance, education using self-directed learning, group of people practice, and multi-strategy interventions. Therefore, technical capacity tends to be acquired through more formalised instruction, study, and practical training. Given that this tends to be a more specialised set of skills, the target audience could be generally much narrower.

- **Adaptive Capacity Development (ACD):** Adaptive Capacity Development refers to the ability of an organisation to monitor, assess, respond to and create internal and external changes. According to Amadei (2020: 3), capacity development can play a vital role in community development when dealing with the sudden shocks associated with events of diverse adversity. Essentially, capacity development relates exactly to how community stakeholders cope with these events. Therefore, adaptive capacity development describes in what way they can adapt to these events over time. In this perspective, capacity development can be understood as counteracting the challenges/vulnerability (susceptibility) that community stakeholders may be facing in such circumstances.

The concept of a learning organisation is captured in this area of organisational capacity. This area comprises:

- **Environmental Learning Capacity (ELC):** ELC involves the ability to learn about what is happening in the local community, as well as staying current with what is going on in the field through networking with community leaders and funders.
- **Programmatic Learning Capacity (PLC):** Programmatic Learning Capacity involves the ability to assess the needs of clients and to use the results of programme evaluation as a learning tool in enhancing programme delivery. This is different to the technical skill of programme evaluation above, as programmatic learning capacity refers to the ability of the organisation to make use of the results to improve performance and service delivery.
- **Organisational Learning Capacity (OLC):** OLC involves the capability to carry out self-assessments and to utilise the findings to carry out and follow through on strategic plans.

In addition to the aforementioned components, Buss (2010: 9) indicated that capacity development programmes, whether in the petroleum industry or in any other organisation can be fulfilled in many different ways, depending on the target group; capacity development programmes objectives and geographic considerations.

3.8. Capacity development programmes for the target group

In general, capacity development programmes' target group includes institutions (policy-makers, decision-makers, etc.), organisations and individuals (Buss, 2010: 9). However, capacity development programme objectives for these target groups involve policy advice, reform processes, organisational development, setting up or providing the range of skills required (in the petroleum industry sector) and geographic considerations which involve local capacity development programmes. According to Amadei (2020: 4), depending on how capacity development can play its role in the community, it can be commonly agreed that capacity development is:

- Critical to the success of human capital capacity development;
- A vital attribute of resilient, peaceful, and sustainable communities;
- Takes time to acquire with multiple twists and turns and sometimes some setbacks, and
- Scale and context-specific.

However, capacity development can be assessed qualitatively or quantitatively using performance indicators where the performance can take forms such as decision-making, leadership, service delivery, financial management, ability to learn and adapt, pride and innovation, organisational integrity, etc. (Amadei, 2020: 4). In light of the aforementioned, Buss (2010: 9) stated that the key providers of capacity development programmes could require not only training, but also conferences and meetings, depending on the capacity development programme objectives and the target group. Moreover, Buss (2010: 9) indicated that travelling to another country might be necessary to acquire the desired knowledge and/or skills, whilst also depending on the target group and economic reasons (a broad capacity development programme's offering and financing are important factors to consider in a capacity development programmes strategy).

Nevertheless, in the case where the target group of capacity development programmes are individuals, capacity development programmes' instruments (training, workshops; conferences; self-training: through information available on websites, books, or eLearning; further education; study visits; meetings; etc.) are applied to enhance individuals' knowledge, technical skills and so on. At this level, if the target group tends to be the largest (large number of participants), mass-instruments such as seminars and workshops may be applicable (Buss, 2010: 9). Furthermore, in the case where the target group of capacity development programmes is an organisation, the training of individuals is also necessary. Technical skills, leadership and management skills play a major role in organisational capacity development. In this case, the target group is usually smaller and more concerted instruments such as coaching, mentoring, twinning is also viable (alongside the usual

mass training approaches). According to Buss (2010: 9), tools for capacity development programmes for individuals and organisations can also be applied to increase capacity and bring about change at the institutional level (policy development, strategic planning, leadership, etc.), which is influenced by the actions of individuals. Moreover, Buss (2010: 9) indicated that the key for sustainable capacity development programmes is that training is embedded in a long-term (national) strategy and is not treated as just an element that ends the moment the programmes/projects are completed. However, training is reasonably one of the many instruments available for capacity development programmes (next to other instruments, such as seminars, workshops, twinning: pairing two instruments, etc.), and can be applied to all layers (institutional, organisational, human resources) in all of which individuals are active.

Thus, useful tools for capacity development programmes usage in the petroleum industry are successful factors that can effectively develop human capacity for organisational effectiveness. In the petroleum industry, as well as in other sectors of the economy, human capacity development should be amongst the priorities and central to any change, innovation, and transformation. Failure in using capacity development programmes and in applying appropriate tools for human capacity, development in the petroleum industry can cause organisational stagnation, decline and technical skills shortages. A skills development policy is obviously necessary before envisaging any action for capacity development programmes.

3.8.1 Human capacity development perspectives in the petroleum industry

Kwame (2017) stated that the human capacity refers to the spectrum of personality characteristics and other dimensions of human performance that enable social, economic, and political institutions to function and remain functional over time. According to the South African Labour Department Report (2010: 7), an additional understanding of human capacity development involves dimensions that sustain the working and application of the rule of law, political harmony, a disciplined labour force, just legal systems, respect for human dignity and the sanctity of life and social welfare. It is further stated that human capacity development refers to formal and explicit activities that enhance the ability of all individuals to reach their full potential (the South African Labour Department Report, 2010: 7).

In enhancing the skills, knowledge, and abilities of individuals; capacity development programmes can assist in improving the productivity of workers in their areas of work. Increased productivity and the improvement of skills could support petroleum industry development, economic development, as well as social development. This implies that no social, economic, and political institutions can function effectively without being upheld by a network of persons who stand firmly by them (Kwame, 2017). In the light of the aforementioned and in relation to human capacity development perspectives in the petroleum industry, it is understandable and admitted that human capacity development or a lack of human capacity development can be distinguished from negative human capital to positive human capital (Kwame, 2017).

The lack of human capacity development can be seen as a negative factor for effective organisational innovation or development to perform core functions, solve problems, define, and achieve objectives and to understand and deal with development needs in a broad context and in a sustainable manner (United Way of Calgary and Area Report, 2011: 4). According to Kwame (2017), negative human capital or human capacity decay can develop negative attitudes, behaviours, and actions such as a lack of respect, integrity, responsibility and empathy, dishonesty, inequality, corruption, racism, greed, selfishness, and aggression. On the contrary, capacity development programmes can be useful in terms of equipping individuals with the understanding, skills and access to information, knowledge and training programmes that enable them to perform effectively within the organisation or in society (Buss, 2010: 7).

However, capacity development programmes can also be a powerful tool that promote positive human capital within the organisation or society to strengthening the ability of an organisation towards achieving a desired outcome and in supporting organisations to build, develop and maintain the skills, infrastructure, and resources to achieve their mission (United Way of Calgary and Area Report, 2011: 5). This implies that positive human capital or personality traits promote human and institutional performance in the spheres of social, economic, and political development (Patriotism). Therefore, capacity development programmes can be understood as a tool that helps to eliminate or reduce the ineffectiveness of human capital (negative human capital) and act as a mechanism to promote positive human capacity to perform core functions, solve problems, define, and achieve objectives and deal with development needs in a broad

context and in a sustainable manner. Indeed, the perspectives of investing in capacity development or on building positive human capacity can have several benefits.

3.8.2 Benefits of investing in human capacity development

Generally, effective capacity development can benefit both the petroleum industry and local stakeholders by generating inclusive processes that strengthen trust and build commitment and good relationships. For the South African petroleum industry, capacity development could be an exit and sustainability strategy for skills shortages. However, according to the International Labour Report (2010: 4), investing in human capacity development can offer the following benefits:

- Skills development enhances both people's capacities to work and their opportunities at work, offering more scope for creativity and satisfaction at work;
- The future prosperity of any country depends ultimately on the number of persons in employment and how productive they are at work;
- Link education, skills, productivity and economic growth;
- Empowers people to develop their full capacities and to seize employment and social opportunities;
- Raises productivity, both of workers and of enterprises;
- Contributes to boosting future innovation and development;
- Encourages both domestic and foreign investment and thus job growth, thereby lowering unemployment and underemployment;
- Leads to higher wages; and
- When broadly accessible, expands labour market opportunities and reduces social inequalities.

Without doubt, investing in human capacity development can have various profitable impacts at different levels of the organisational function and on individual capacity improvement. Rue (1997: 334-335) stated that a growing organisation and new and changing customer needs may all be related to the need for improvement in human capacity or skills that must respond to potential changes. Therefore, to be successful, managers and workers must be able to adapt to these changes. According to Rue (1997: 334), change as it applies to organisations can be classified into three major categories: (a) technological, (b) environmental and (c) internal to the organisation. Furthermore, human capacity development or a lack of human capacity development can affect change positively or negatively in relation to technological, environmental, and organisational perspectives.

However, technological, environmental, and organisational internal changes need to acquire new skills training programmes for best practice. Technological changes that need human skills improvement include such things as new equipment and new processes. Technological advances in recent decades have been dramatic, with computers and the increased speed of communication being the most notable. Moreover, managers and workers need to improve their skills to adapt and manage themselves with current environmental changes in observing opportunities and threats that the environment can have in relation to organisational development. In addition, environmental changes are all the non-technological changes that occur outside the organisation. This includes new government regulations, new social trends, economic changes, international trends, and ecological trends, which require the awareness and competencies of managers or employees of a certain organisation.

Additionally, constant skills training programmes for human capacity development are needed for internal changes in organisations. Managers and workers need to be empowered with new skills, mainly for organisational performance and competitiveness. Changes internal to the organisation include elements such as budget adjustments, policy changes, diversity adjustments and personnel changes, which require human competencies development (Revenio, 2016). Therefore, types of change affecting organisations, which necessitate constant skills training programmes for human capacity development, could be many, Table 3.3 comprises certain types of changes affecting organisations, which need constant human skills development.

Table 3.3 Types of change affecting the organisation

Technological change	Environmental change	Internal organisation change
Machines Equipment Processes Automation Computers New raw materials Robots, etc.	Laws Taxes Social trends Fashion trends Political trends Economic trends Interest rates Consumer trends Competition Suppliers Population trends	Policies Procedures New methods Rules Re-organisation Budget adjustments Restructuring of jobs Personnel Management Ownership Products/services sold

Source: Adapted from Revenio (2016)

As illustrated in Table 3.3, the incentive for capacity development programmes and/or for human capacity development in the petroleum industry is important for employees' readiness for any types of change that can greatly affect and promote the jobs of managers and employees. The modern management system and on-the-job training for both managers and employees can be profitable in helping improve the petroleum industry's productivity and performance. Thus, changes without human capacity development seem to be impossible. According to Rue (1997: 334), how an employee perceives a change greatly affects how that person reacts to the change. While many variations are possible for capacity development programmes usage in any organisation or institution, employee capacity development for organisational performance, competitiveness and productivity is amongst the prevalent key reasons.

3.8.3 Principles supporting capacity development programmes for human capacity development in the petroleum industry

In general, capacity development programmes support the principle that the workforce (human capital) is best empowered with training programmes to realise its full potential when efforts are put into place to teach employees to do something in the better way (UNDP, 2009: 5). This means that capacity development increases self-sufficiency and promotes or empowers targeted communities with the skills, knowledge, and opportunities they need for environmental innovation, change and development and

to improve their lives. However, capacity development programmes in the petroleum industry involve the process through which employees or individuals obtain, strengthen, and maintain capabilities to set and achieve their own development objectives over time (UNDP, 2009: 5). However, it can be emphasised that capacity development programmes in the petroleum industry, if soundly used and well implemented, can be the locomotive of employees'/human capacity development. The UNDP (2009: 5-6) also suggested that capacity development programmes can help improving a practicable framework, that can accommodate workplace skills training programmes (human capacity/skills development programmes) and policies and strategies to be implemented for the best performance of the workforce in the petroleum industry. Furthermore, capacity development programmes are bringing about transformation that supports sustainable development.

However, sustainable development without sustainable human capacity development is impossible. In the petroleum industry, or in other socio-economic sectors, it is possible that capacity development programmes can provide new solutions to old problems so that training programmes can help new skills to be available to face challenges that may arise in the petroleum industry. Thus, capacity development programmes appear to be an essential factor for human capacity development and consequently for petroleum industry development and socio-economic transformation. The following sections examine capacity development programmes and dimensions of human capacity in the petroleum industry.

3.8.4 Capacity development programmes and dimensions of positive human capacity development in the petroleum industry

Internationally, there is emerging agreement in the development community that capacity development is the engine of socio-economic transformation, and that capacity development is the locomotive of human capacity development (UNDP, 2009: 4-5). It has also been indicated that human capacity development has the power to accomplish tasks competently and to ensure efficiency (Kwame, 2017). Therefore, capacity development programmes can contribute to human capacity development in terms of not only enhancing understanding, skills and access to information and knowledge; but also, more greatly in terms of certain talents/assets/qualities acquisition that might be obtained in the process of skills training programmes, which

promote new dimensions of positive human capital. This is very significant for organisational performance and success. According to Kwame (2017), the composition of positive human capital (human potential, human abilities, human capital, aesthetic capital, moral capital, and spiritual capital) can contribute to empowering and developing human capacity through capacity development programmes. The components of positive human capital, their functions and attributes are presented in Table 3.4. Therefore, levels of improved human capacity (positive human capital capacity) need to be considered and addressed. Particularly, dimension of moral capital needs an important consideration when developing employees' skills in the workplace. Firstly, employees' moral improvement or development in the workplace is necessary for them to have a positive attitude towards their work environment.

Therefore, improving, developing, or changing morale of employees may require various motivational methods that include a fair remuneration, fair working conditions, challenging work, etc. However, developing high morale in the workplace could be a significant factor of reflecting a positive and healthy image of the organisation from the external environment. Secondly, positive attitude of employees in the workplace can influence positively the culture of the organisation in two dimensions, including economical and human dimensions. The economical dimension consists of paying attention to labour turnover (income/revenue), which could have impacts of productivity and organisational profit; and the human dimension consists of paying attention to improving and implementing leadership styles that take into consideration employees' human rights in the workplace. Thus, it can be specified that the development of human moral capacity in the workplace could bring about satisfaction and stimulate employees' productivity in the long term and assist the organisation achieve defined goals and objectives.

Table 3.4 Dimensions of positive human capital capacity development

Type of Capital	Explanation/ Function	Attributes/Constituents
Moral Capital	Habits and attitudes relating to right and wrong; usually demonstrated by human conscience	Integrity, humility, sincerity, charity, courtesy, patience, faithfulness, sensitivity, purity, honesty, kindness, justice, honesty, trust, etc.
Aesthetic Capital	A strong sense and commitment for excellence/attractiveness; ability to appreciate good work/looks; truth; and skills to judge what is good and acceptable	Passion for modernisation; imagination, inventiveness, innovation and creativity
Human Capital	The know-how and skills acquired and used to enhance human productivity.	Skills (technical, conceptual, intellectual, analytic and communications)
Human abilities	The power/capacity to accomplish tasks competently; a necessary component of acquired human capital to ensure efficiency	Wisdom, vision, commitment, judgement, responsibility, reasoning, competence, interest, devotion, dedication
Human Potentials	Human talents and capabilities waiting to be harnessed for people-centred development; existing human potentials at any time depend on the levels of spiritual and moral capital	Visionary, creativity, initiative, reaching for excellence, confidence, etc.
Spiritual Capital	The aspect of the human personality that possesses the capability to be in tune with the universal laws and principles of human life by which humanity must live if the "good and abundant life" is to be achieved; provides insights and furnishes creativity, inventiveness	Pursuit of and carrying out what is true, obedience to the truth; effectiveness in carrying out tasks; creativity, inventiveness

Source: Adapted from Kwame (2017)

Human capital capacity development involves abilities and attributes (combination of intelligence, skills and expertise that gives an organisation its distinctive character) indicated in Table 3.4 that are valuable and which can be developed by appropriate investments (Hossain and Roy, 2016: 1020). Table 3.4 provides key evidence of the components to be considered as part of capacity development programmes for positive human capital competencies development and for organisational change. Positive human capital capacity development (developing human capital capacity in relation with organisational ethical development) is a necessity not only for petroleum industry development, but also for socio-economic transformation.

As shown in Table 3.4, human skills training programmes or capacity development programmes in the petroleum industry will have to consider or take into account the components of positive human capital in building, developing and promoting accountable human capital. Indeed, it is an imperative to indicate that challenges affecting organisational and institutional development and socio-economic

transformation in any country, including South Africa, could be related to the lack of accountable positive human capital. Therefore, an urgent intervention with appropriate tools such as capacity development programmes (involving components of positive human capacity) is imperative. Various available tools can be used in tackling some of the most intractable socio-economic challenges, which involve skills shortages, corruption, poverty, income inequality, threats to social cohesion, on-going demographic (race, gender, age, class and geographic) inequities and the impact of globalisation (Report for Human Resource Development Strategy for South Africa (HRD-SA 2010 – 2030, 2009: 6-7).

However, capacity development programmes in their holistic dimensions should be of first choice, because of positive human capital skills development, which is the locomotive of change, innovation, and transformation in any society. In the same way, it is also imperative to include various training programmes that create, promote, and develop positive human capital as one of the vital responses to the challenges affecting organisational, institutional, and socio-economic transformation process in South Africa. However, according to the Human Resource Development Strategy for South Africa (HRD-SA 2010 – 2030, 2009: 6-7), holistic training programmes for positive human capital capacity development are essential for maximising the potential of the people of South Africa through the acquisition of knowledge and skills to work productively and competitively.

This is promising to achieve a rising quality of life for all, together with the necessary organisational and institutional arrangements to achieve goals. Furthermore, to realise their potential, workers need to improve their knowledge, skills, and self-governing values (workers' self-governing values can be built or developed through training programmes that reflect dimensions of positive human capacity as presented in Table 3.4) and they also need opportunities in which to apply them. Furthermore, it is indicated that human capacity development requires integrated and concerted strategies, policies, plans and programmes to ensure the development of the full potential of human being, so that they may, individually and collectively, be capable of improving their standard of living. It is generally agreed that if overall human conditions are to improve, there must be increasing emphasis on human capacity development. Such development provides for increases in productivity, enhances competitiveness, and supports economic growth (Report for Human Resource Development Strategy

for South Africa (HRD-SA) 2010 – 2030, 2009: 8). According to the International Finance Corporation (IFC, 2014), behavioural capacities, which involve the dimension or element of positive human capacity, have to do with cultural shifts and changes in attitude. In the petroleum industry, an important component of capacity development, especially in a multi-stakeholder context, is raising awareness to influence changes in the attitudes, practices and behaviours of individuals, groups, and organisations. These changes could include partnering/collaborating, developing alliances, and interacting in new or different ways. Behavioural capacity development can also prompt changes in strategy direction, policies, and institutional culture. Table 3.4 provides a good understanding of the role that positive human capital and capacity development programmes can play in human capacity development.

Clarity about aspects relative to negative human capital is necessary to be indicated for building a deep understanding of the significance or role that capacity development programmes can play in the process of increasing/supporting human capacity development. Thus, socio-economic transformation in South Africa is not about the delivery of goods to a passive people (passive human capital) but is about empowering active people (the workforce) with the skills and knowledge for active involvement and growing empowerment. However, turning passive human capital (passive employees) into active human capital (active and positive employees) is the expected role that the CDP-PUSH-Effects model (Capacity Development Programmes that Promote Useful Skills Hopefully and Effectively) could play in promoting the South African petroleum industry's performance and the socio-economic transformation process in the country.

3.8.5 Capacity development programmes as an innovative strategy for human capacity development in the petroleum industry

According to Hossain and Roy (2016: 1021), human capital capacity can be understood as the stock of available accumulated knowledge, skills, experience, and creativity and relevant attributes that an organisation can develop to ensure higher level of performance and gain competitive advantage by using its workforce effectively and efficiently. Human capital capacity development tends to focus specifically on strategies that are aimed at using skills development and supply to promote socio-economic growth (South African Department of Labour Report, 2010: 11).

The growth and transformation of any organisation or society begins with the transformation of the individual (UNDP, 2009: 5). The importance of human capital capacity development is that it can provide competitive advantage to the organisation in terms of wealth, success, innovation, creativity, and performance. Improved or innovative training programmes are fundamental to create workforce that provide competitive advantage. Therefore, the organisation must create an environment that provides knowledge, motivation, engagement, which will be difficult for competitors to imitate (Hossain and Roy, 2016: 1023). Consequently, the introduction of more advanced technologies can be one of the reasons for required innovative skills, necessary in the context of overall economic growth and social improvement. Indeed, capacity development programmes can support the better development and management of the skills required for the petroleum industry's performance and development.

However, the lack of capacity development programmes best practices or the lack of innovative skills training programmes in the petroleum industry can be a major cause of skills shortages or of negative human capital, which can have a harmful impact on the performance and development of the petroleum industry. According to Kwame (2017), negative human capital or human capital decay undermines the functioning of institutions, systems, development interventions, social cohesion, and nation building. Moreover, skills shortages and the lack of capacity development programmes best practices can affect human capital effectiveness in terms of contributing actively to petroleum industry development and socio-economic transformation processes in the country. Furthermore, capacity development programmes best practice can be seen as an appropriate tool to eradicate the issue of skills shortages, by providing constant quality skills training programmes and improving the best implementation of the capacity development framework.

3.9 Significance of capacity development programmes in the petroleum industry

The rationale for this research is based on empowering workers and managers with skills training programmes that can enable them to manage the petroleum industry efficiently and successfully. Therefore, the fundamental issues to be addressed in this study rely on the relationship between capacity development programmes usage in

the petroleum industry and the effects therefore on socio-economic transformation in the country. It is socio-economically vital and imperative to explore diverse dimensions towards addressing capacity development issues, whether in the petroleum industry or in any other sector of the economy. However, the petroleum industry worldwide is one of the most competitive sectors where existing operational workers and managers need to be assisted constantly with capacity development programme; to recurrently improve their skills in a working or technically demanding industry where innovation and change are constantly indispensable due to environmental requirements (United Nation, 2015: 4-6). According to Smit (2011: 71-77), change and growth (innovation), if well managed by both public and private organisations, can pose major opportunities for socio-economic well-being and reduce the risks of negative effects.

According to Liebenberg (2010: 206-207) and Hoskins (2012: 129-147), socio-economic improvement involves innovation and growth, as well as the best practice of capacity development programmes. Furthermore, the world is presently affected by instabilities resulting from increased global competition and technological innovation. This requires the petroleum industry to be in line with change. Change without capacity development programmes seem to be impossible, given that learning the usage of new methods or new technologies requires necessary new skills or new learning programmes. According to Mukanova (2013: 32-36), socio-economic transformation involves an integrated development of factors such as trade, health, education, industry, politics, housing, agriculture, transportation, communal services and tourism and recreational development. This implies that the main outcome from socio-economic transformation is change in the quality of life through efforts to reduce any potential crises related to unemployment, poverty, and inequality.

However, capacity development programmes in the petroleum industry can influence socio-economic transformation through improved and increased productivity as well as through the flow of petroleum products in the economy. Therefore, human capacity, scientific, technological, organisational, and institutional and resource capabilities are the ingredients of capacity development that can contribute to successful petroleum industry performance and development, which can drive to achieve socio-economic change and transformation (UNDP, 2009: 5).

3.9.1 Capacity development programmes for petroleum industry performance

Buss (2010: 6) defined capacity development programmes as the ability of people, organisations, and society as a whole to manage their affairs successfully. This implies that possible and credible training programmes for human capacity development in the petroleum industry could probably increase the level of awareness in managing organisational affairs effectively or successfully. Successful management of the petroleum industry will need to consider skills development tools that include components of positive human capital. The level of awareness requiring skills improvement and development can regularly create positive human capital, which is envisaged to be the engine of petroleum industry development and socio-economic transformation.

According to Kwame (2017), positive qualities of human capital can constitute the foundation of petroleum industry performance; social equality; good governance; economic growth and development; peace and security; social and political stability; and social cohesion. However, the levels of positive human capital are critical for individual and social development. In this instance, the South African petroleum industry will need positive skilled human capital for the effective and successful implementation of a framework that promotes capacity development programmes usage. Trends in human capital decay (negative human capital, skills shortages, or lack of skills development) in the South African petroleum industry could be one of the reasons for capacity development programmes.

According to Kwame (2017), the impact of human capital is doubtlessly true that a positive quality of human capital is the cornerstone for equipping for leadership, nation-building, and prosperity. In contrast, negative human capital lacking the necessary qualities can destroy communities, retard change, and create tension, instability, and ultimately socially undesirable outcomes. Thus, it is significantly imperative to pursue the development of positive human qualities if development goals are to be achieved and an inclusive, tolerant, and progressive civil society is to be built. The pathway towards the development of positive human qualities in the petroleum industry or in the country as a whole is transformational education development, research and training programmes at all levels of formal education, at the workplace and in lifelong

learning programmes for adults (Kwame, 2017). Hence, petroleum industry development and socio-economic transformation in South Africa is a function of positive human capacity development.

3.9.2 Incentives for capacity development programmes for petroleum industry performance and socio-economic transformation

Reza (2007: 12) indicated that the National Enterprise and World Bank surveys revealed that skills shortages and inadequate skills are amongst the salient factors affecting the productivity and performance of many firms, including the petroleum industry. It is also indicated that, whether in the manufacturing sector or in the service sector, inadequate skills and skills shortages are the greatest constraints to productivity improvement and to socio-economic transformation. Research found that the most important barrier to firm productivity improvement is related to skills constraints or skills problems (Reza, 2007: 12-14). According to Reza (2007: 12-14), findings also revealed that the primary factor constraining employment growth in the manufacturing or service organisations is a scarcity of skilled labour.

This implies that presently or in the future, organisations that expect to improve their productivity and contribute to socio-economic transformation will have to act in accordance with a capacity development strategy for qualified individuals in the various skill-intensive sectors of their functional or operational departments. According to the International Labour Organisation Report (2010: 1), prioritising education, lifelong learning, job training and skills development strategies linked to growth strategies are the specific reasons justifying the incentives of capacity development programmes for petroleum industry performance and socio-economic transformation. Furthermore, the International Labour Organisation Report (2010: 1) provides five additional broad reasons that justify the usage of capacity development programmes for organisational performance and socio-economic transformation.

Table 3.5 highlights these reasons. Moreover, the globalisation of markets is accelerating the diffusion of technology and the pace of innovation. This implies that new occupations are emerging and replacing others, which require skills and competencies to manage an evolving knowledge of the content of production processes and services. A major challenge for the South African petroleum industry could be simultaneously to enhance the responsiveness of education and training

systems to these changes in skill requirements and to improve access to training and skills development. Some countries have used capacity development programmes (training and re-training) in their responses to the skills challenges. They have come to realise that each country's prosperity depends on how many of its people are in work and how productive they are, which in turn rests on the skills they have and how effectively those skills are used (Internal Labour Office Report, 2010: 1).

Table 3.5 Incentives for using capacity development programmes in the petroleum industry

Reasons/incentives for skills development programmes	Statements for skills development programmes
▪ Availability of needed quality skills as a foundation for actual and future working activity	Skills programmes for all and children in school and not only at work are an essential foundation of future training.
▪ Building solid bridges between the world of work and training providers to match skills provision to the needs of enterprises	This is often done best at the sectorial level where the direct participation of employers and workers, together with government and training providers, can ensure the relevance of training.
▪ Workplace training and lifelong learning enabling workers and enterprises to adjust to an increasingly rapid pace of change	Decent work, a universal aspiration, is the best path to the self-advancement of women and men. It underpins the stability of communities and families. It is an integral component of strategies for sustainable growth and development. And skills are pivotal to decent work strategies.
▪ Anticipating and building competencies for actual and future needs	Sustained dialogue between employers and trainers, coordination across government institutions, labour market information, employment services and performance reviews are steps to early identification of skill needs.
▪ Access to training opportunities for women and men, and particularly for those groups facing greater difficulties, in particular youth, lower skilled workers, workers with disabilities and rural communities	The training strategy for strong, sustainable, and balanced growth addresses strategic issues, as well as practical arrangements. It provides a platform for a further exchange of ideas and experiences among a wide range of institutions, enterprises, and experts from all countries.

Source: Adapted from International Labour Organisation (2010: 1)

Table 3.5 illustrates some of the reasons or incentives for skills development programmes in the petroleum industry. However, there could be various other explanations or clarifications justifying the incentive for using capacity development programmes in the petroleum industry. In terms of the International Labour

Organisation (2010: 1), developing solid skills provision to the needs of enterprises, workplace training and lifelong learning enabling workers and enterprises to adjust to an increasingly rapid pace of change could be amongst the most useful key reasons, which can be considered as fundamental to petroleum industry performance and development. Therefore, capacity development programmes (skills training programmes in the workplace) can be an integral component of strategies for sustainable growth and development. Thus, the International Labour Organisation (2010: 1) argued that the training strategy for strong, sustainable, and balanced growth provides a platform for the further exchange of ideas and experiences amongst a wide range of institutions, enterprises, and experts from all countries. The following section discusses the approach and contribution of capacity development programmes to petroleum industry development and socio-economic transformation.

3.9.3 Approach and contribution of capacity development programmes to petroleum industry performance and socio-economic transformation

Capacity development's contribution to petroleum industry development and socio-economic transformation is based on the approach that helps business owners to create or grow their enterprise, to increase their earnings and create/promote dignified employment opportunities for existing employees and for potential new recruits (Reza, 2007: 34). However, increasing opportunities for employment and for new recruits can help in contributing to and promoting the economic development of communities. Furthermore, according to the United Way of Calgary and Area Report (2011: 3), capacity development programmes (skills training programmes) are important in the petroleum industry to alleviate the critical issue of skills shortages facing the industry.

Additionally, Reza (2007: 34) indicated that two of most important principles surrounding skills development or capacity development programmes' contribution to socio-economic transformation include the availability of skills training to economically empower individuals, including the unemployed and extending to highly skilled professionals as well as the transferability of skills training once the qualification has been achieved. In addition, capacity development programmes can promote and support human capacity development, leadership and infrastructure sustenance, capacities improvement for individuals, as well as the possibilities/opportunities to apply newly acquired skills, which depend to a large extent on the incentives created

at institutional and organisational levels (Buss, 2010: 7). According to the South African Department of Labour Report (2010), the approach and contribution of capacity development programmes for petroleum industry performance and socio-economic transformation can be perceptible through skills development and equity amongst employees. In addition, contribution includes quality-training programmes that enable new entrant to participate in accredited work and possible improvement of concerted strategies, policies, plans and programmes that increase productivity, enhance competitiveness, and support socio-economic growth.

Thus, in light of the aforementioned, it can be clarified that the approach and contribution of capacity development programmes for petroleum industry performance and socio-economic transformation can be seen in two basic values. The first value includes the fact that the human capacity development is at the centre of all activity's improvement and secondly, human resources are an essential means of achieving economic, social and development goals (South African Department of Labour, 2010: 9).

3.9.4 Significance of capacity development programmes for socio-economic transformation

Capacity development programmes can be an important strategy intended to improve or develop the beliefs, attitudes, values, and structure of organisations, which can help to better practice new technologies and provide ways for challenge resolution or solving problems related to human capacities or skills improvement. Moreover, capacity development programmes can be seen as a kind of process designed to bring about transformation in managing businesses (Vinesh, 2014: 215). However, according to the United Way of Calgary and Area Report (2011: 5-6), the significance of capacity development for socio-economic transformation could be that it aims to strengthen the ability of an organisation to achieve a desired societal outcome. The following sub-section describes the approach of increasing human capacity for socio-economic development and the interacting components of capacity development programmes, which are considered as major building blocks for effective human capacity development.

3.9.4.1 Interacting components of capacity development programmes considered as major building blocks for effective human capacity development

According to the South African Department of Labour Report (2010: 9), increasing human capacity for socio-economic development is based on five interacting components as major building blocks for effective human capacity development, which comprise:

- Promoting the lifelong acquisition of knowledge, skills and competencies necessary for the performance of chosen roles that contribute economically and socially to the self and others;
- Facilitating the application of knowledge, skills and competencies in chosen roles in rewarding ways;
- Improving access to assets (such as land, shelter, capital and information) without which the development of human capabilities is often essentially stunted at the source;
- Sustaining human resources through policies and regulatory mechanisms that underpin broad inter-sectoral support for both the acquisition and the application of knowledge and skills; and
- Ensuring a modicum of the sense of the individual, local and national security, peaceful political and favourable national and international economic conditions.

According to the South African Department of Labour Report (2010: 9), facilitating the acquisition and application of knowledge, skills and competencies can promote organisational effectiveness and performance. Furthermore, human skills development could be essential to strategic investment because it strengthens and promotes self-reliance and increases the prospect of project success (IFC, 2014: 48). Therefore, effective capacity development can benefit both the petroleum industry (stakeholders) and socio-economic improvement by generating inclusive processes

that strengthen trust and build commitment and good relationships. In addition, innovation, change and development in the petroleum industry due to capacity development can create expansion and improvement in oil and gas field services, as well as in other different sectors such as the chemical and agricultural industries, with a flow of products and services that can be useful for socio-economic sustainable and development.

According to IFC (2014: 48), the socio-economic extension effects from capacity development can include both supporting local initiatives that are focused on building capacity in communities and working hand-in-hand with local organisations to strengthen their organisational capacity and impact. In addition, the effects involve the fact of focussing on strengthening rural communities by providing training and access to innovative skills so that micro-entrepreneurs' expertise can improve their small businesses and ultimately generate their own development.

3.9.4.2 Capacity development effects in supporting local initiatives and working hand-in-hand with local organisations

Socio-economically, capacity development promotes the ability of producing change or transformation that empowers individuals, leaders, organisations, and societies (UNDP, 2009: 5). This implies that a fundamental relationship connects capacity development to local initiatives and local organisations such as petroleum industry development and socio-economic transformation. Without doubt, challenges in terms of human skills development, the lack of mentorship programmes and the culture of the working environment in the petroleum industry could have negative impacts for socio-economic improvement in South Africa.

Conversely, capacity development in the petroleum industry could be a vital tool for employees' skills development by improving a robust learning infrastructure with appropriate petroleum industry learning interventions to ensure the sustainability of skills currently and into the future. Furthermore, an improved skills development framework for greater industry engagement with educational institutions to meet the requirements of the petroleum industry and to maximise available resources is socio-economically important (South African Department of Energy Report, 2010 and SAPIA Report, 2012). This is because capacity development programmes consist not only to adapt to organisational (technological) change or innovating the organisation, but also

about adapting existing products and processes to achieve higher levels of productivity as applicable to local contexts. In this process, the skills of managers to access technological know-how is necessary in shaping their capacity to make available products and services both kind that are essential to improve living standards and that could also promote growth and competitiveness (United Nation Report, 2015: 6). However, the vision for socio-economic transformation and the challenges experienced by the South African petroleum industry predicts a strong need for capacity development programmes that provide available skills training programmes for human capacity development and for better service delivery (SAPIA Report, 2012). In the previous sections, it was outlined that human skills development through capacity development programmes can be fundamentally profitable for the South African petroleum industry's performance and development, as well as for socio-economic transformation.

Therefore, whether for the country's development process or for organisational or individual development purposes, capacity development programmes can contribute profitably to improving decision-making, promoting the best practice of policies, increasing the opportunity for creativity, and promoting innovation in the management of petroleum businesses. Vinesh (2014: 215) postulates that capacity development programmes appear to be socio-economically profitable and useful in terms of addressing employees' weaknesses in any organisation; improving workers' performance; improving the quality of service and products; ensuring employee satisfaction; increasing productivity; and facilitating the better management of socio-economic activities. Additionally, capacity development programmes could help in:

- Optimising the utilisation of the workforce;
- Creating a better corporate image;
- Developing a sense of team-work, team spirit and inter-team collaborations; and
- Improving the health and safety of the organisation in preventing obsolescence.

At the national level, capacity development programmes may be profitable in supporting the vision of skills for sustainable growth, development, and equity. It also contributes to supporting economic growth from promoting productive employees in the petroleum industry by aligning skills development with national strategies for growth and development; and advancing a culture of excellence in skills development and lifelong learning in the petroleum industry (South African Department of Labour, 2005: 3).

Thus, in light of the aforementioned, capacity development programmes in the petroleum industry could be seen as a vital strategy to be used and applied in supporting and accelerating quality training programmes for all in the workplace and promoting employability and sustainable livelihoods through skills development. Furthermore, capacity development programmes can contribute to assisting designated groups, including new entrants, to participate in accredited work, integrated learning, and work-based programmes to acquire critical skills to enter the labour market and self-employment (South African Department of Labour, 2005: 6-12).

3.10 Factors influencing and promoting capacity development programmes in the petroleum industry

According to Smit (2016: 56-57), petroleum products or different other type of products alone cannot create a competitive advantage for the petroleum industry's development. Smit (2016: 57) stated that business environment changes or instabilities would continually increase the need for managers and workers to study environmental influences and changes. Therefore, capacity development programmes allow managers and workers in any organisation or institution to constantly improve and adapt their skills level in relation to environmental changes and instabilities so that they can understand all of the different environments and sub-environments changes to ensure that their decisions reflect changes in any of these environments. The following section explores the socio-economic factors influencing capacity development programmes in the petroleum industry.

3.10.1 Socio-economic factors

It is significant to emphasise that socio-economic factors that necessitate the use of capacity development programmes in the petroleum industry can be interchangeable. This means that certain social components that affect/promote the use of capacity development programmes in the petroleum industry can also be considered as essential factors that affect/promote the use of capacity development programmes for economic growth. Similarly, certain economic components that necessitate the use of capacity development programmes in the petroleum industry can be considered as important social factors that affect/promote the petroleum industry as well as socio-economic transformation. These factors are related to the business environment constituents comprising the macro and micro-environments components and the market environment components (Smit, 2016: 58).

It is of vital importance to remind one again that capacity development programmes in the petroleum industry are for employees' skills training programmes, which need to be readily available and for which the requirement for skills training programmes is for human capacities/abilities development. However, according to the OECD (2013: 13), formal or informal, skills training programmes lead to a qualification, whether for highly skilled or lower skilled employees, or both. This implies that skills training programmes needs should be constantly (annually) assessed and skills training programmes should be provided for all employees at all levels and in all departments and sections of an organisation (petroleum industry). Generally, in the petroleum industry or in any other socio-economic sectors, capacity development programmes seem to be a key factor of human capacity development. It encompasses the need to keep employees abreast of technological and social changes towards sustaining a competent and productive workforce (OECD, 2013: 35).

Furthermore, capacity development programmes can provide opportunities for employees to improve their abilities, skills, and potentiality, which is practically useful for organisational performance and socio-economic transformation. According to the African National Congress' (ANC) 5th National Policy Conference Report (2017: 2), socio-economic transformation requires the promotion of economic growth and development and eradicates the triple scourge of unemployment poverty and

inequality. As iterated in the preceding sections, there are tools and factors that need to be considered as key instruments to be used in promoting economic growth and social development, as well as in tackling unemployment, poverty, and inequality. According to the UNDP (2009: 4), internationally, there is an emerging agreement in the development community that capacity development is the engine of socio-economic transformation, and that human capacity development is the locomotive of organisational performance and development. Therefore, an essential ingredient of the capacity development approach is “transformation” (UNDP, 2009: 5).

Transformation can possibly occur through capacity development programmes and capacity development programmes can be an essential tool for human capacity development. This indicates that if institutions and organisations envisage contributing to socio-economic transformation, then workers and managers must be empowered with the kind of skills programmes that help them to realise their full potential. The following section illuminates the business environment factors that can influence capacity development programmes in the petroleum industry for performance and development and for socio-economic transformation in the country.

3.10.2 Business environment factors

There is a need for planned efforts to assure individuals and groups and the entire organisation learns to do what they have been doing differently. According to Smit (2016: 57), as indicated at the aforementioned section, business environment factors impacting or promoting capacity development programmes in the petroleum industry comprise the macro-environment (external environment), market environment (external/competitive environment) and micro-environment (internal environment). The macro-environment components comprise constituents, which include the political, economic, social, technological, international, and ecological factors, while the micro-environment refers to the organisation itself or to the internal environment of the organisation as well as all its sub-systems.

The micro-environment components comprise the mission and goal of the organisation, the organisation and its management, the resources of the organisation and organisational culture (Smit, 2016: 57, 59 and Smit, 2011: 64). The market environment, which is also one of the most important constituents of the business

environment, comprises elements such as consumers and their needs, purchasing power and behaviour, suppliers, intermediaries, competitors, substitute products, possible new entrants, and labour unions. These components will not be considered for discussion in the process of this study, given that the market for the organisation's products or services consists of people who have needs to satisfy and these people must also have the financial means to satisfy their needs. Therefore, this study aims not to improve the capacity of people who have needs to satisfy or the financial means to satisfy their needs, but to develop the capacities of people who can increase and improve the quality of products and services for people to satisfy their needs. However, market components, which are presented together with micro and macro-environmental components in Table 2.6, may also be considered as useful factors that can influence the usage of capacity development programmes in the petroleum industry.

These factors determine the nature and strength of competition in a specific industry through which managers' capacity development is required to understand the dominant forces in the industry in which they compete. Only the macro and micro-environment factors are discussed in this study for the simple reason that managerial skills and competency improvement at various managerial levels are required for decision-making because the business environment is becoming increasingly unpredictable and changes caused by uncontrollable macro-variables can have implications for the micro-environment (Smit, 2016: 60, 66). From the aforementioned understanding, capacity development programmes in the internal environment (micro-environment) can assist to improve and increase the capacity of managers in terms of keeping excellent control over the organisation through the application of the management process and through business' potential strengths or weaknesses.

Managers' competency improvement is also needed to skilfully observe the external environment (macro-environment and market environment conditions/behaviours). However, the focus of this study is limited to the internal and external variables which are impacting capacity development programmes in the petroleum industry, given that capacity development programmes in the internal environment can help in implementing efficient strategies in relation to organisational structure, leadership and culture, the allocation of resources, reward systems and training interventions (Smit, 2016: 61).

Table 3.6 comprises the business environment constituents and the factors impacting/promoting capacity development programmes in the petroleum industry, which represent the unstable and uncontrollable environmental forces that may stimulate managers and workers to be aware of the need to increase their abilities constantly for organisational competitiveness and sustainability (Smit, 2016: 66).

Table 3.6 Business environment factors impacting/promoting capacity development programmes in the petroleum industry

Micro-environment factors	Market environment factors	Macro-environment factors
▪ Mission and goals of the organisation ▪ The organisation and its management, e.g. marketing, financial and purchasing management ▪ The resources of the organisation, e.g. human resources, capital and expertise ▪ Organisational culture	▪ Consumers, their needs, purchasing power and behaviour ▪ Suppliers ▪ Intermediaries ▪ Competitors ▪ Substitute products ▪ Possible new entrants ▪ Labour unions	▪ Political (government) environment ▪ Economic environment ▪ Social environment ▪ Technological environment ▪ International environment ▪ Ecological/physical environment

Source: Adapted from Smit (2016: 58)

Table 3.6 illustrates the importance of understanding that the macro-environment influences the organisation (micro-environment), such as the petroleum industry, directly. Therefore, according to Smit (2016: 60), in addition to micro and macro-environment factors as indicated in the aforementioned Table 3.6, the main characteristics of the business environment that could have an impact on capacity development programme usage in the petroleum industry and for which workforce skills improvement are constantly needed include the following:

- **Constant business change**

The business environment changes constantly, which requires capacity development programmes for change in the skills improvement of managers and workers. Some of the changes are minor and do not require a drastic

investment in human skills development, whereas other changes may require managers to make drastic management decisions to align the organisation with the changes;

- **The interrelatedness of environmental factors or variables**

This interrelatedness of environmental factors or variables suggests that change in one external factor may cause a change in many or all other factors in the environment. For example, a drastic fall in the value of the Rand could mean that imported goods such as fuels and cars become more expensive. This could trigger higher inflation, followed by increased interest rates. This in turn could mean that consumers will have less money to spend on luxury items such as holidays. In this case, capacity development programmes could assist managers to think in advance about potential events that could affect the organisation and to make wise decisions from evaluating the internal environment about different approaches to be used in assessing the capabilities of the organisation;

- **Increasing Instabilities**

The interdependence between environmental factors results in increasing instability and change in the business environment. Environmental fluctuations are greater for some industries and businesses than for others. Capacity development programmes could be useful in training managers with skills programmes that make them aware of environmental instabilities and changes so that they know how to manage businesses in different circumstances for the organisation to remain profitable from the opportunities that a certain environment can offer. Capacity development can also assist managers to remain aware of the threats or weaknesses that can affect the organisation and try to minimise any detrimental negative effects on the organisation.

- **Environmental uncertainty**

Some business organisations function in an environment of great uncertainty; whilst others face more stable environments. Managers and workers' capacity development is required to adapt to an environmental uncertainty situation, where business need to keep on being sustainable and profitable.

- **The complexity of the environment**

The business environment for some industries changes rapidly. Other industries may face fewer and slower changes. Skills improvement and development is further required in a complex environment so that managers and workers are aware of rapid changes impacting the organisation, which require them to constantly learn about the usage of new technologies or to have new knowledge and new information about new processing methods of production for products or services to be provided in the market.

Therefore, capacity development programmes appear to be the required tool for organisations to adapt themselves where the environment is becoming increasingly unpredictable. Consequently, skills improvement and development are therefore necessary for managers to focus on both the internal as well as the external environments when making decisions. The following section discusses the macro and micro levels of capacity development programmes in the petroleum industry.

3.10.2.1 The macro and micro levels of capacity development programmes in the petroleum industry

The OECD (2015: 5) and Viljoen (2016) argued that capacity development programmes can support petroleum industry performance and socio-economic improvement through the micro and macro-levels:

- **Micro-level**

Capacity development can support improvements in productivity and spur innovation. Investing in skills development in the petroleum industry is crucial

to improving individual outcomes and driving better economic performance as skills underpin innovation, the adoption of leading technologies and ultimately productivity to drive strong economic growth. Skills development also boosts earnings and enhances individuals' opportunities and well-being, supporting thriving communities and societies. The performance and development of the petroleum industry depends largely on the abilities, competencies, or skills of the workforce: workers that are more skilled tend to be more productive. They also make it easier for the petroleum industry to introduce and disseminate productivity-enhancing technologies and new ways of working. Skills are also significant at the individual level as they considerably increase an individual's chances of being employed and, conditional on being in employment, increase his/her chances of being in a productive and rewarding job. The OECD (2015: 5) showed that skills proficiency has a significant impact on hourly wages over and above the effect of education. Skills also significantly increase the chances that workers will be in a stable job (compared to being in an atypical, often precarious job).

- **Macro-level**

Capacity development can support high levels of employment in good quality jobs. Capacity development programmes (skills development) can contribute to economic growth both directly through increases in productivity and indirectly by spurring innovation. Capacity development can take advantage of skill development policies to promote growth and individual wellbeing. Therefore, concerted efforts by all stakeholders (national and local governments, individuals, employers, and unions) are required to ensure that people at all ages and stages in their lives are able to develop relevant skills; activate those skills on the labour market; and utilise them effectively in the workplace and across economies and societies.

Therefore, sustainable growth and employment opportunities improve incentives for communities to invest in social development (the education of the younger generation for example). The South African vision 2030 is to advance economic transformation and social cohesion, promote job creation and reduce or eradicate poverty and

inequality (Manuel, 2011: 90). According to Rodrik (2007: 2), economic growth is the most powerful instrument for job creation and prosperity, for reducing poverty and improving the quality of life in developing countries. However, Rodrik (2007: 2) stated that capacity development programmes for human capacity development are an essential tool that provides skills for individual development, organisational performance, and an enabling environment to boost socio-economic transformation. In addition, it is stated that in recent years, organisations have been forced to change the way business is done in the effort to adapt to change or face the risk of being left behind (OECD, 2006: 12). This implies that every organisation needs to introduce and use capacity development programmes as a key strategy that improves stakeholders' competencies and skills for easy adaptability to changing situations of the organisation, society, and economy.

According to the International Labour Organisation (2010: 34), the main goal of providing capacity development programmes in the petroleum industry is for knowledge training, professional training, post-training, off-job training, and spare-time training thereby providing opportunities for economic transformation and social change. The sections that follow explore and describe the components of the macro-environment, which are essential constituents that can affect or promote capacity development programmes in the petroleum industry. The components of the micro-environment were explored and discussed in Chapter Two, which relate to the pyramid of organisational capacity development interventions as well as in Chapter Four that relate to the case studies of capacity development in the petroleum industry.

3.10.2.2 Macro-environment factors

According to Smit (2016: 58) and Smit (2011: 64), the macro-environment comprises factors such as political/government environment, economic environment, social environment, technological environment, international environment, and ecological environment. These factors influence the organisation directly through the effect of interest rates on financial management or legislation with which human resource management must comply. However, Smit (2011: 67) indicated that the macro-environment factors constantly cause changes in the economic growth rate, levels of employment, consumer income and the rate of inflation, the exchange rate, and the

general state of the economy. Nevertheless, these macro-economic factors/forces ultimately result in prosperity or adversity and have specific implications for an organisation and its management. The main interfaces between the economic environment and the organisation are the economic growth rate, consumer income, inflation, monetary and fiscal policy, and fluctuations in these magnitudes. Therefore, according to Smit (2011: 77), capacity development programmes in the petroleum industry can promote human capacity development in contributing to the economic prosperity of a nation through the range of products, services it produces, and renders.

This implies that the lack of capacity development programmes usage (causing skills shortages in the petroleum industry) could have a negative impact on the performance and improvement of the petroleum industry and consequently on the slight flow of petroleum products/services, which also could have a negative impact on gross domestic product growth (GDP growth). Smit (2011: 77) posits that the gross domestic product is the total value of finished articles and services (including finished petroleum products and services) produced in a given period (usually a year) within the borders of a country. Therefore, if the economic growth rate of a nation is lower than the population growth rate, there will be a constant decline in the standard of living.

On one hand, products/services could become costly because of declining purchasing power and on the other hand, organisations will have to realise that declining purchasing power is accompanied by a change in buying behaviour as well as the type of products sought. With declining income, any organisation could face problems in supporting projects like capacity development programmes and in promoting the improvement of skills development of the workforce. Fiscal policy through tax rates and tax reforms in the petroleum industry can also affect or promote initiatives for capacity development programmes and for human capacity development.

Thus, the technological factors and fiscal reform, including other economic trends, demand constant awareness on the part of management and regular consideration of the mission, goals, and strategy of the organisation, which also require the skills development of the workforce. However, managers and workers in the petroleum industry, once empowered with capacity development programmes (skills training programmes) can better fulfil the mission, goals and strategy of the organisation and contribute positively to the country's GDP growth and socio-economic transformation.

The next sub-section explores the government or political environment as the primary component of the macro-environment.

3.10.2.2.1 The government/political factors

According to Williams (2016: 47) and Smit (2016: 59, 71), the political/government component includes the legislation, regulation and court decisions that govern and regulate business behaviour. The political factor takes into account elements of the country's politics, especially political pressures exerted by the ruling government and its institutions in the business environment (Smit, 2011: 65). Therefore, the petroleum industry's decisions for performance, competitiveness and development are continually affected by the course of a country's politics. Moreover, as an essential component of the macro-environment, the government influences the petroleum industry primarily as a regulating force by promulgating and enforcing laws which influence the petroleum industry with measures that are usually politically directed to steering development and socio-economic policy in a certain direction (Smit, 2016: 71 and Smit, 2011: 82).

Government also influences the petroleum industry by means of the annual budget; taxes; import control; the promotion of export; price control in respect of petroleum products and services, the marketing of petroleum products; health regulations and incentives; as well as other measures to force change/development in a certain direction (Smit, 2011: 66). In light of the aforementioned, it is reasonably essential to understand that the South African government can play a fundamental role in supporting and promoting capacity development programmes in the petroleum industry. By doing so, the government and petroleum industry could contribute to enhancing the skills improvement of managers and workers in the petroleum industry so that they can become the locomotive of petroleum industry development, as well as the locomotive of socio-economic transformation in the country.

However, the government and the petroleum industry's failure in supporting and promoting capacity development programmes or in supporting human capital capacity development in the petroleum industry could result in many consequences. These include for example the hiring of external competences; a lack of local human skills development; a lack of competitiveness; a lack of performance and development within the petroleum industry; and consequently, this could result in a poor contribution

of the petroleum industry to socio-economic transformation. According to Smit (2011: 65-66), to an increasing extent, it remains the task of the petroleum industry's management to study and suggest capacity development programme activities or projects to the government so that government measures as well as political trends can positively influence petroleum industry development. Thus, the country's legislation and regulation that govern and regulate business behaviour can be an opportunity or a threat for capacity development programmes in the petroleum industry. Opportunities arise when the government and the petroleum industry come together and upkeep human skills development as a priority amongst others in terms of tackling the issue of skills shortages in the petroleum industry and in terms of promoting petroleum industry performance/development and socio-economic transformation.

In addition, an opportunity exists when both the government and the petroleum industry are committed to participating with available and practicable policies and funds that stimulate efforts to invest in human capacity development. Threats arise when the government or the petroleum industry are not much interested in uplifting workforce capacity/skills development through capacity development programmes, as well as when policies and funds are not sufficiently or properly used to implement capacity development programmes, whether in the petroleum industry or in any other sector of the economy. Furthermore, the lack of awareness from both the government and petroleum industry can be considered a threat in terms of neglecting or ignoring the real problem affecting petroleum industry development and the socio-economic transformation process in the country.

According to Smit (2016: 59), managers in the petroleum industry and in different other organisation or institutions should be well-informed about changes in labour law, taxes, minimum wages, dispute resolution and the Competition Act 89 of 1998. Therefore, managers and workers' capacity development are constantly required because management's decisions are continually affected by the course of the country's politics, especially political pressures exerted by the ruling government and its institutions in the business environment. However, managers in public organisations are also strongly required to develop and constantly improve their capacities/abilities because the perceived stability or not of a government and the integrity or not of its leader and government officials have a major influence on the

actions of investors. These perceptions either attract or deter local and foreign investors to invest in a country that plan to eradicate unemployment, poverty, and inequality (Smit, 2016: 71). According to Williams (2016: 47), new laws and regulations should continually be put in place to impose additional responsibilities on public and private organisations. In the case of the South African petroleum industry, new laws and regulations are needed in terms of boosting the awareness of shareholders and stakeholders about fighting and resolving the issue of skills shortages, by promoting capacity development programmes or human capacity development in the petroleum industry and for the stimulation of socio-economic transformation.

3.10.2.2.2 Economic factors

It was stated in the aforementioned sections that the economic environment comprises factors such as the country's growth rate, levels of employment, consumer income, the rate of inflation, recession, exchange rates, the interest rates, the monetary and fiscal policy of the government and many more that influence management decisions (Smit, 2016: 59). It was also stated that these economic variables are constantly unstable factors that may cause an opportunity or threat to an organisation. Therefore, due to constant instability or uncontrollable conditions of economic variables, capacity development programmes in the petroleum industry could become a necessary tool that support and empower human capacity development in observing and preventing these economic forces that ultimately result in prosperity or adversity and have specific implications for an organisation and its management.

Therefore, managers and workers in the petroleum industry will have to develop constantly their capacity to ensure that the adversity from economic factor instability is minimised and does not affect the organisation. In addition, managers' and workers' capacity development is constantly required in taking advantage of economic factor adversity or instability to maximise profitable opportunities for the organisation. Managers' capacity development is required more when economic trends demand constant vigilance on the part of management, which may require them to re-visit the mission, goals, and strategy of the organisation to assess whether they are still achievable (Smit, 2016: 68). In addition, managers in public institutions are required to constantly improve their capacities to cope with the economic environment, which not only influences other environments and businesses, but also are themselves

influenced by other trends such as crime, confidence in the government and investors' perception of a country's stability. According to Manuel (2011: 365), South Africa's vision for the long-term consists of eliminates poverty; reduce unemployment and inequality by promoting sustainable socio-economic transformation. By referring to this long-term vision, the key factor that could contribute efficiently to socio-economic transformation in South Africa is economic growth. However, according to the OECD (2015: 3), investment in skills development must be a key driver that support development, inclusive growth and helps to reduce inequality and poverty in the context of lifting and promoting inclusive growth. In addition, the Report for Human Resource Development Strategy for South Africa (HRD-SA) 2010 – 2030 (2009: 7-8) argued that human capacity development is about taking purposeful action to increase the aggregate levels of skills in the workplace so that opportunities can be maximised for individuals, thereby benefiting society as a whole.

Moreover, it is indicated that such development provides for increases in productivity, enhances competitiveness, and supports economic growth. The HRD-SA Report 2010 – 2030 (2009: 7-8) also emphasised that human capacity or skills are developed through capacity development programmes by two basic principles, namely: that the human being is at the centre of all development activities and that human resources are an essential means of achieving economic, social and development goals. However, according to the Report for Human Resource Development Strategy for South Africa (HRD-SA) 2010 – 2030 (2009: 9-10), socio-economic transformation requires effective human capacity development. Furthermore, this Report indicated that there are five interacting components, which are major building blocks for effective human capacity development, including:

- Promoting the lifelong acquisition of knowledge, skills and competencies necessary for the performance of chosen roles that contribute economically and socially to the self and others;
- Facilitating the application of knowledge, skills and competencies in chosen roles in rewarding ways;

- Improving access to assets (such as land, shelter, capital and information) without which the development of human capabilities is often essentially stunted at the source;
- Sustaining human resources through policies and regulatory mechanisms that underpin broad inter-sectoral support for both the acquisition and the application of knowledge and skills; and
- Ensuring a modicum of the sense of individual, local and national security; peaceful political and favourable national and international economic conditions.

Additionally, it is indicated that these building blocks form the basis for deriving essential activities to accomplish the following goals:

- The vital importance of organisational capacity development in developing countries, particularly the critical importance of qualified personnel;
- The vital importance of cooperation between the public and private sectors through the effective implementation of policies, plans and programmes for economic development and the optimal use of resources to that end; and
- The vital importance of appropriate organisational and institutional policies and their implementation to promote human capacity development through the optimal use of resources, taking due account of the importance of capacity development programmes.

3.10.2.2.2.1 Economic goals of human capacity development

The OECD (2015:15) stated that skills requirements or the demand for skills ultimately determine how productive each country's economy is or how productive and competitive an organisation can be. This implies that a healthy demand for high-level skills is also the basis upon which organisations/economies can pursue research and development and innovate, ultimately determining their long-term growth potential.

According to Viljoen (2017), Rodrik (2007: 3) and the Ugandan Ministry of Energy and Mineral Development Report (2011: 6), economic of capacity development in the petroleum industry consists of increasing the technological capacity of production and improving the petroleum industry value chain activities; contribution to sustainable direct; indirect and induced job creation; and national GDP growth. Moreover, petroleum industry efficiency will maximise profits. Petroleum industry profits become part of the government's tax base or tax revenues from which the government can have its economic power maximised. It is also evident that the impacts of capacity development in the South African petroleum industry could be recognised through increasing opportunities for entrepreneurship or new initiative for small business development in the country. As a major source of energy, petroleum industry development could influence socio-economic activities in terms of petroleum products flow in the economy and fuel-related industry activities improvement (oil and gas field services improvement and development).

The economic impacts from possible petroleum industry value chain development (including crude oil activities, Head office activities, refinery activities, distribution activities, storage activities, wholesales activities and retail activities) are job creation; government's increased revenue; industrialising industries or related industries development; and effects on enabling businesses and public and private sectors to generate sustainable national wealth. Furthermore, the economic goals of skills development in the petroleum industry are for the performance and development of the petroleum industry and for the flow of petroleum products that may generate economic growth both directly through increase in productivity and indirectly by spurring innovation (OECD, 2015: 5). Therefore, public, and private organisational support of human capacity development can guarantee successful socio-economic activities. There is evidence stating that financial support of human capacity development can help models and frameworks for capacity development programmes to be appropriately structured (United Way of Calgary and Area, 2011: 11).

According to Smit (2011: 13), capacity development programmes or human capacity development can boost:

- The petroleum industry's value chain development;

- The petroleum industry's governance: Leadership development, mission, goal and strategy improvement and achievement;
- Individual development: Skills training capabilities, technical capabilities and other areas of personal and professional development;
- Specific effects in all areas of economic, social, cultural and educational and spheres of life; and
- Human resource development: The process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively.

Thus, effective human capacity development forms the basis for deriving essential activities to achieve the organisational goals and to boost capacity development's role in the petroleum industry. The following section emphasises the economic barriers to capacity development programmes.

3.10.2.2.2 Economic barriers to capacity development programmes

The United Way of Calgary and Area Report (2011: 11) stated that without an appropriate structure supporting human skills improvement, capacity development programmes could be seen as disconnected and unrealistic. Therefore, the lack of financial support or the lack of investment in capacity development programme activities whether in the petroleum industry or in any other sectors of the economy could cause poor outcomes in the effort of improving human capacities. There is evidence, which suggest that little/limited resource investment in supporting capacity development services (providers, mentors, or capacity builders) can result in poor quality services provision. In other words, offering services that focus on one or two areas of capacity will not produce expected impacts, which consist of reducing or eradicating the challenges related to skills shortages, skills waste, or the deficit of positive human capital capacity (United Way of Calgary and Area Report, 2011: 11).

This also suggests that there could be significant low-quality skills development, low performance of human contribution to organisational development and socio-economic transformation and low levels of satisfaction for capacity development services provision. However, available funds in supporting capacity builders or providers could be an essential ingredient for quality field expertise (knowledge of the organisation's requirements and its challenges) and content expertise (knowledge of skills programmes required by the organisation). According to the United Way of Calgary and Area Report (2011: 12), organisations funding capacity development programmes activities pose significant challenge to developing and sustaining highly effective human skills development within the organisation.

Funders are more interested in backing exciting new projects than in funding organisational skills programmes that can create competitive advantages, promote creativity, innovation, development, and transformation. The United Way of Calgary and Area Report (2011: 12) indicated that investment from three to five years needs to be in place before meaningful improvement; change or transformation could be achieved. Moreover, in the South African petroleum industry, successful outcomes from capacity development programmes could be contingent upon where the activities are directed. Capacity development programmes efforts will have to focus on areas such as strategic planning and technical assistance, including financial management, under the assumption that this will improve organisational effectiveness.

However, depending on the type of skills, programmes required in the petroleum industry, capacity development programmes activities for strategic planning or technical assistance could have higher correlations to organisational effectiveness when a strong support can be expected from stakeholders (government and the private sector). Thus, successful capacity development programmes usage will consist of implementing the learning from training activities to strengthen the petroleum industry. Therefore, the skills and systems will have to be incorporated into day-to-day operations so that they become part of the organisational culture (organisational culture refers to way in which things get done). The following section highlights the social factors that can promote or hamper capacity development programmes in the petroleum industry.

3.10.2.2.3 Social factors

In the global environment, various social factors could be identified as barriers that obstruct the use of capacity development programmes in different sectors of the economy, including the petroleum industry. According to Smit (2016: 68) and Smit (2011: 79), the most important social factor that can affect or promote capacity development programme usage is organisational socio-cultural change. Smit (2016: 68) stated that socio-cultural change is very sensitive to cross-influences by other variables, especially technology and the economy. In the petroleum industry, socio-cultural change can affect management directly through employees' conduct and performance. The performance needed for a successful petroleum industry can be related not only to employees' skills development, but also to the organisational culture.

For example, a better practice or usage of capacity development programmes (sustainable skills training programmes for human capacity development and better usage of available skilled employees in the area of activity where they can perform diligently or steadfastly) in the petroleum industry can one be that promote the culture of innovation, performance and development. However, people in particular communities, organisations or society can become products of the environment in which they are working, living and where they are spending most of their time (Smit, 2011: 79). For that reason, the culture of effectiveness or competitiveness, which involves the philosophy of innovation, excellence or of doing good by doing well, can inspire employees in any organisation to adopt the language, values, faith, expectations, and rules of the organisation. Therefore, according to Williams (2016: 47), socio-cultural changes in employees' behaviour, attitudes and beliefs can also affect organisational socio-economic activities.

A holistic approach that takes into account organisational culture is thus important. Moreover, the organisational culture or the way of life of employees' working in groups influences an individual's lifestyle. Employees values, behaviour, attitude, faith, expectations, way of life and habits can be a function of cultural and social change (Smit, 2011: 79). Therefore, capacity development programmes in the petroleum industry could serve not only as the locomotive of human capacity development, but also as the engine of social change, which can promote/improve employees' values,

behaviour, attitude, faith, expectations, way of life and habits. This implies that training programmes that can promote the skills/abilities of employees can also improve employees' values, behaviour, attitude, faith, expectations, way of life and habits. This also means that capacity development programmes in the petroleum industry can contribute to stimulating a positive change of culture within employees through an improved philosophy (attitude, thinking, values, beliefs, and way of life) of doing well by doing good. Through this positive change of culture, capacity development programmes in the petroleum industry could be at the centre of social change, changes in cultural values and contribute to keeping up with the major influences of social trends on the petroleum industry. This suggests also that the lack of capacity development programmes usage in the petroleum industry can be a barrier that could reduce the effects of social change or decrease opportunity for changes in cultural values improvement.

However, the lack of improvement in cultural values could cause failure in the awareness of the best practice of capacity development programmes and for the best usage of available skilled individuals in the petroleum industry. According to Buss (2010: 8), project evaluation and research studies sufficiently demonstrated that failure in the use of capacity development is mainly found in non-technological reasons and is very often related to a lack of awareness and lack of capable human resources. This study examines both aspects, lack of awareness and lack of capable human resources as barriers that can obstruct the effective usage of capacity development programmes in the South African petroleum industry.

3.10.2.2.3.1 Social goals of capacity development programmes

Initially, it is important to acknowledge that the social goals of capacity development programmes in the petroleum industry consist of increasing human capacities at the workplace and eliminating the potential causes of skills shortages. According to Folscher (2006: 1), the shortage of critical skills in the petroleum industry or in any other socio-economic sectors, especially amongst the black population, is seen as a key impediment to the growth of the economy as a whole, as well as to the growth of individual companies. The goals of skills development interventions in the petroleum industry could be mainly for job competence development, affirmative action, and

succession planning and economic growth. Table 3.7 comprises the description of certain goals related to skills development in the petroleum industry.

Table 3.7 Social goals of skills development in the petroleum industry

Job competence development	In the petroleum industry, skills development programmes ensure that all employees are fully equipped and fully competent in their jobs and have the necessary skills to meet performance standards. Additionally, employees need to have a career path mapped out so that they can advance beyond their jobs, should they wish to do so.
Affirmative action	The outcome of effective action is a reasonable amount of diversity in all levels and categories of the workforce. The shortage of key skills in the petroleum industry needs to be tackled with skills programmes that promote human capacity development. A specific skills programme that leads to performance must be the key strategy for skills shortages in the petroleum industry.
Succession planning	In the current climate of skills shortages in critical positions, the petroleum industry should plan ahead to ensure it has access to the skills pool so that key positions are filled or can be filled without delay by competent people.
Economic growth	The generic scorecard sets very high employment equity and skills development targets.

Source: Adapted from Folsher (2006: 1)

In light of Table 3.7, a skills development programme is more effective when the world of learning and world of work are linked (OECD, 2015: 13). This means that successful skills development programmes can bring together government, employers, and work organisations to promote/improve human capacities. The implication is that capacity development in the petroleum industry could create opportunities that enhance human capacity development and develop managerial capacity in the petroleum industry and in the country (Viljoen, 2017). The main idea behind the social goals for capacity development usage in the petroleum industry consists of taking advantage of the opportunity to pair South African firms with leading international companies.

Since international firms dominate the South African petroleum industry, capacity development programmes usage could contribute to training and transferring expertise and competences to South Africans. In turn, capacity development may be more efficient in contributing to unemployment, poverty, and inequality reduction (socio-economic transformation). According to the OECD (2015: 16), investment in capacity development could help firms and the overall economy become more productive. Moreover, it could frequently foster a culture of achievement and

innovation through skills acquisition and development, as well as promote the lifestyle improvement of many South Africans. Without a doubt, human capacity development can contribute to social dimension by means of implementing the best practice of skills acquisition from capacity development programmes. Secondly, it can also be acknowledged that capacity development programme goals are for boosting petroleum industry development and contributing effectively to economic and social transformation. The OECD (2015: 15) stated that skill requirements or the demand for skills ultimately determine how productive each country's economy is. This implies that a healthy demand for high-level skills is also the basis upon which firms/economies can pursue research and development and innovate, ultimately determining their long-term growth potential.

According to Viljoen (2017), Rodrik (2007: 3) and the Ugandan Ministry of Energy and Mineral Development Report (2011: 6), the impacts of capacity development on the petroleum industry consists of increasing the technological capacity of production and improving petroleum industry value chain activities, contributing to sustainable direct, indirect, and induced job creation and national GDP growth. Furthermore, petroleum industry efficiency will maximise profits in the petroleum industry as petroleum industry profits become part of the government's tax base or tax revenues from which the government can have its economic power maximised. It is also evident that the impacts of capacity development in the South African petroleum industry could be recognised through increasing opportunities for entrepreneurship or new initiatives for small business development in the country.

As a major source of energy, petroleum industry development could influence socio-economic activities in terms of petroleum products flow in the economy and fuel-related industry activities improvement (oil and gas field services industry improvement and development). The combined economic impacts of capacity development programmes from petroleum industry value chain development (including crude oil activities, Head office activities, refinery activities, distribution activities, storage activities, wholesales activities and retail activities) are job creation, government's increased revenue, industrialising industries or related industries development and effects on enabling businesses and the public and private sectors to generate sustainable national wealth.

Thus, the economic goals of skills development in the petroleum industry are to improve the performance and development of the petroleum industry and provide the flow of petroleum products that may generate economic growth both directly through increase in productivity and indirectly, by spurring innovation (OECD, 2015: 5).

3.10.2.2.3.2 Social barriers to capacity development programmes

According to Buss (2010: 11), one of the major barriers to capacity development programmes in the petroleum industry is convincing and getting the support of decision-makers (public or private sectors) for promoting capacity development programmes, which closely link to the lack of awareness or lack of sufficient know-how about the probabilities and risks of petroleum industry technologies development. This implies that organisational or institutional lack of awareness of capacity development programmes, added to limited capacity and a lack of policies/strategies best practices could stand as strong barriers inflating/fuelling skills shortages in the petroleum industry. According to the United Way of Calgary and Area Report (2011: 11), challenges to capacity development best practice include several factors.

These may include the lack of a clear understanding about capacity development programmes' roles or effects; little attention or effort to the framing of capacity development programmes initiatives in the petroleum industry or in any other socio-economic sector and the lack of appropriate support for effective activities; and mixed evidence supporting capacity development programme outcomes. Institutional and organisational lack of consensus in framing a useful model/means to tackle factors causing barriers to capacity development programmes or human skills training programmes in the petroleum industry can be an additional challenge to capacity development programmes usage, petroleum industry performance and socio-economic transformation.

However, the lack of an appropriate framework (unclear framework or model) for capacity development programmes usage in the petroleum industry can reduce innovative initiatives or opportunities to improve human capacity and to achieve the goals and objectives defined by the organisation. Without an appropriate framework, model, or structure for capacity development programmes usage in the petroleum industry; human skills development can be seen as disconnected or incoherent.

In other words, an appropriate model or framework for capacity development programmes and its best practices in the petroleum industry can boost skills programmes implementation, improve human capacity, and eliminate the skills shortages issue in the petroleum industry.

3.10.2.2.3.3 Social tools that can promote capacity development programmes in the petroleum industry

Smit (2016: 68-69) stated that the culture of a particular country is not homogeneous. There are numerous sub-cultures based on nationality, religion, population group or geographical area, each of which modifies the environment and has implications for management. Smit (2016: 69) indicated that the organisation is at the centre of social change, because it contributes to social change and because it has to adapt to changing social trends. Also, there are social problems that necessitate managers' capacity development, based on the fact that management cannot afford to ignore social influences (such as crime, violence, xenophobia, the collapsing of family structures, substance abuse, obesity, the HIV/AIDS epidemic and poverty, etc.) when making business decisions.

Socio-economic transformation is also subject to human capacities development that brings about improvements that are responsible for changes in the environment. However, three successful social tools can promote capacity development programmes in the petroleum industry (the United Way of Calgary and Area Report, 2011: 8-9). The same tools can also have positive impact on socio-economic transformation. The concept of champions, culture and readiness are amongst the crucial tools that necessitate particular attention for improvement and change to take place in the petroleum industry (the United Way of Calgary and Area Report, 2011: 9). A description of these tools is provided below.

I. CHAMPIONS

According to the United Way of Calgary and Area Report (2011: 9), champions are the internal staff or members of the board who help drive the change forward within the organisation. In the South African petroleum industry, capacity development programmes (activities) will have to identify influential champions who are committed

in guiding efforts to implement change strategies. These individuals (champions) will need to have the required skills or the capacity of planning the overall approach, driving the implementation of skills programmes, and promoting it to everyone within the organisation. In tackling the issue of skills shortages in the South African petroleum industry, change efforts will need senior people who have the time and resources (skills) available to them to own the capacity development programmes initiative and ensure that the change is driven within the petroleum industry. One of the most important reasons of persistent skills shortages in the South African petroleum industry could be related to the lack of champions available to drive and promote capacity development programme best practices. Hence, change efforts often fail because of a lack of a champion with the skills, time, and resources to make capacity development programme initiatives a success.

II. ORGANISATIONAL CULTURE

According to the United Way of Calgary and Area Report (2011: 9-10), any activity related to capacity development programme efforts in the petroleum industry will have to take into account the current organisational culture. Willson (2001: 48) describes organisational culture as the way in which things are done and it has a significant influence on the attitudes and behaviours of organisational members. Organisational culture is like hermetic glue that holds the organisation together. It is also significant to indicate that culture is especially difficult to change in some of the organisations that lack the use of capacity development programmes or have limited access to capacity development programmes as an essential tool that can be used to improve organisational culture.

Therefore, any activity related to capacity development programmes in the petroleum industry must not only be effective in the existing culture, it must also be designed to bring about changes to the organisational culture. According to Willson (2001: 49), organisational culture refers to the internal environment of the organisation, which reflects the norms and the values of the formal structure of the organisation, as well as the history of the internal and external struggles. In addition, organisational culture refers to the types of people who work in the organisation, the work processes and the physical layout, the ways of communication and the disciplinary methods authority

uses. However, the United Way of Calgary and Area Report (2011: 9) indicated that the internal organisational culture could be a threat or an opportunity to capacity development programmes as well as to organisational requirements for change, transformation, and development. Threats occur when the organisational culture is a barrier to capacity development programmes usage within the organisation or to its best practices. Opportunity occurs when an organisational culture promotes or supports the usage or the best practice of capacity development programmes within the organisation. Therefore, an organisation that supports capacity development programmes as an essential tool to transformation is entitled to have a performance orientation or performance culture. It is also stated that organisations that with a culture where performance is highly valued (strong performance culture) are more likely to be successful in their capacity development programme efforts (United Way of Calgary and Area Report, 2011: 10).

The South African petroleum industry, in tackling the issue of skills shortages or in promoting skills development, will have to acknowledge the need for change in terms of its performance orientation or performance culture. However, developing this type of culture requires not only a substantial commitment in time and resources, but also a strategic and intellectual approach for it to be successful. According to Willson (2001: 49), the effect of culture on planning and effectiveness due to capacity development programmes interventions can work for an organisation by creating an environment that is conducive or advantageous to improving the performance of employees by making them productive, satisfied and making them take part in development and change.

Moreover, the organisational culture can also work against itself by setting up barriers to capacity development that will prevent the strategies of the organisation being achieved. It is therefore vital for the organisation to use capacity development programmes constantly and ensure that the culture is positive, since it governs the lives of the entire workforce who operate within the organisation. Capacity development programmes can also foster or give a sense of identity and unity to all members of the organisation, facilitate commitment from all workers and shape behaviour by providing guidance on what is expected (Willson, 2001: 49).

III. READINESS

One of the challenges facing capacity development programmes (support on human factor skills development) in the petroleum industry can be the organisational lack of readiness to undertake capacity development programmes activities. According to the United Way of Calgary and Area (2011:10), the lack of organisational readiness to undertake capacity development programmes efforts could affect the implementation of successful strategies. As stated earlier, capacity development programmes are the locomotive of human factor development, and that human factor skills development is the engine of petroleum industry performance and socio-economic transformation. Therefore, there must be a boosting readiness and willingness motivation in undertaking capacity development programme (activities) in the petroleum industry.

However, change or transformation from eradicating skills shortages or promoting technical skills development within the petroleum industry can only be successful if the motivation to do so is readily present. Yet, motivation to readiness involves indicators that include openness to capacity development programmes activities. However, these activities comprise learning and change; knowing the best of what organisations need to develop capacity through skills assessment (undertake more comprehensive and targeted development work); organisational stability; and the absence of skills crises, as well as the availability of necessary resources and leadership (United Way of Calgary and Area, 2011: 10). The following section discusses innovation as one of the most important factors that can promote or impede capacity development programmes in the petroleum industry.

3.10.2.2.4 Innovation

Innovation may be considered as one of the most critical factors influencing capacity development programmes in the petroleum industry or in any other organisation. Willson (2001: 55) stated that technological innovations are changing jobs and organisations. This suggests that sophisticated information technology necessitates training for change or in other words, skills development for the organisation to adapt to information technological transformation. According to the OECD (2015: 3), skills are a key driver of innovation, of new technologies and higher productivity, which

combine to deliver strong and inclusive growth. This suggests that developing adequate skills and adapting them over peoples working lives can boost the earnings of individuals and enhance opportunities for well-being. Thus, effective skills systems underpin thriving communities and societies. However, O'Connor (2007: 294-295) stated that factors affecting or promoting organisational capacity development programmes are various, but that innovation is amongst the most important factors that requires constant human capacity development. It is an important factor, because many jobs are being re-shaped/re-formed due to technological innovation. This also means that work teams whose members are multi-skilled and who actively participate in team decisions are replacing individuals who used to perform specialised routine jobs.

Moreover, Willson (2001: 55) indicated that all changes in technology/innovation (New equipment, tools, and operating methods) must be adaptable to the structure and to the people in the organisation. In light of the aforementioned, capacity development therefore assists people within the organisation to learn about new technologies that attempt to improve productivity. This innovation should not hinder the progress of the organisation. Furthermore, O'Connor (2007: 294-295) indicated that individuals and organisations typically progress through a number of phases in integrating new ideas, knowledge, skills and abilities into their work. Additionally, various models have been developed to describe the change process with most being variations on the basic model: innovation (new idea), infusion (learning to use the innovation) and assimilation (integration/use of the innovation) (Connor, 2007: 245).

Therefore, the innovation model can serve as a reminder of the need for radical/systematic change and as a reminder to equip the workforce with progressive skills based on new technological information systems. Hence, supporting change in the workplace necessitate capacity development programmes that provide and promote skills training programmes for innovative ideas, knowledge, skills, and abilities. Consequently, the appropriate model is to be developed and used. O'Connor (2007: 245) postulates that capacity development programmes offer dynamic useful ways to think about the major issues related to assimilating new ideas: the innovation itself, the individuals who are asked to use it and the organisational culture. However, Folscher (2006: 3) and Connor (2007: 295) stated that the obstacle to capacity

development programmes could be related to the degree to which the innovation is perceived as being consistent with existing values and experiences (compatibility). Furthermore, obstacle may also include the degree to which the innovation is considered to be easy to use and understand (complexity); the degree to which the innovation may be experimented upon (trial ability); and the degree to which the results of an innovation are visible to others (observability). The following sub-section discusses capacity development programmes and innovation in the African context.

3.10.2.2.4.1 Capacity development programmes and innovation in the African context

With regard to the African context, it may be understandable that most factors influencing capacity development programmes usage could be associated with the cost of innovation or limited financial resources and budget constraints to support learning to use the innovation and the use of the innovation at the workplace. According to the International Labour Organisation (2010:7), an important component of the economic environment that necessitates the use of capacity development programmes in the petroleum industry is new technology advancement (innovation). Economic growth depends more heavily on the productivity of the workforce, complemented by rising labour force participation rates, especially skilled workers. According to the OECD (2015: 16-17), businesses are experiencing particular barriers to up-skilling their workforce with programmes that create ways to innovation.

In Africa, it can be assumed that many countries are experiencing challenges in lacking information about training opportunities in relation to innovation due to insufficient funding for training; small-scale training procurement and human resource management; and concerns related to employee turnover. These obstacles may have significant implications not only for the employability of the workforce and productivity of businesses, but also for the innovative capacity of the economy. This suggests that specific attention/awareness must be given to the general state of African economies, which requires innovative capacities for improvement, particularly in the petroleum industry where skills needs are no less critical. According to Smit (2011:66) and Williams (2016:46), innovation creates opportunities and threats in the environment and within an organisation.

This implies that technological change can benefit a business and can also threaten it. However, innovation can be considered as a benefit or opportunity because it consequently accelerates the rate of change and as a threat because innovation often has unpredictable consequences when organisations are not frequently adapting existing resources (human resource) to new technologies. The risk of being uncompetitive and left behind can be high if an organisation cannot introduce capacity development programmes as a tool in adapting existing competences to new skills programmes that relate to new technologies. Therefore, organisations must embrace new skills related to new technology and find effective ways to use it to improve their products and services or decrease costs. If they not, they will lose out to those organisations that do (Williams, 2016: 46).

According to Williams (2016: 46), technology is the umbrella term for the knowledge, tools and techniques used to transform inputs (raw materials, information, etc.) into outputs (products and services). This suggests that capacity development programmes via new technology could therefore sustain and improve the knowledge, skills, tools, and techniques used to transform input into output. However, change in technology (innovation) can be a fundamental reason in supporting the use of capacity development programmes for workforce skills development and in helping organisations to provide better products or to produce their products more efficiently.

3.10.2.2.4.2 The impact of capacity development and innovation within the organisation

According to Smit (2011: 74-76), new technology/innovation has effects on an organisation. The fundamental effect of new technology could probably be high productivity. Without doubt, high productivity is a function of new skills/abilities development to produce more and better products/services for organisations with keener competition, compelling them to re-assess factors such as organisational structure, division of labour and the appointment of people, methods of production and marketing strategies. Furthermore, new technology can influence management to keep abreast of technological change and affect the organisation as a whole, including its products, life cycle, supply of materials, production processes and even its approach to management (Smit, 2011: 76).

Zino (2014: 4) describes capacity/knowledge/skills development in terms of innovation as a process of improving and applying available/existing capabilities/talents/abilities towards solving current organisational challenges and create new solutions by considering patterns in existing situations/environment. In light of the preceding discussion, it is also understandable that after innovative skills/technologies, which are primary responsible for change in the environment and in the organisation, there is the economy that is in turn influenced by the technological, political, the ecological and the social and international environments. Therefore, in relation to innovation, Folscher (2006:3) indicated that constraints that could hamper achievement in terms of skills development in the petroleum industry or in the workplace might comprise the following fundamental aspects:

- **Lack of a retention strategy** (Companies are constantly at risk of losing skilled employees. An effective retention strategy is necessary to ensure that training and development expenditure shows a return for the company);
- **Fear of an unfair process** (Training needs, especially if they contribute to career development must be identified in a consistent manner, based on agreed criteria);
- **Direct and indirect costs of training** (There are very high, and it is important that funding opportunities be utilised fully. It is also important that the company identify positive results from its training efforts);
- **Lack of support efforts for learners** (In many companies, the workplace environment is not supportive of learners and Strategies to change or work with this need to be developed and implemented to preventing the failure of skills and career development initiatives); and
- **The availability of registered qualifications and accredited training providers** (Poor availability of unit standard-based qualifications and accredited training providers can hamper skills development initiatives).

In relation to the aforementioned description, the additional elements that may possibly cause the persistence of skills shortages or a deficiency of technical skills development in the petroleum industry can be the lack of innovation (innovation can be considered as the vital motive for capacity development or skills improvement in any organisation). Furthermore, an irrelevant training budget (the cost of innovation); and inadequate training policies usage (lack of training policies best practices) could be added amongst elements that may possibly cause the persistence of skills shortages in the South African petroleum industry. Moreover, elements of the business environment as indicated in Table 3.6 and organisational culture such as described in the aforementioned section could have significant impacts on innovation and capacity development programmes usage in the petroleum industry.

Finally, it can be admitted that all factors discussed in the aforementioned sections (socio-economic factors, business environment factors and innovation) are influencing the petroleum industry and affecting it in one way or in another. Capacity development programmes can therefore be a vital key that require the workforce to adapt himself or herself to technological innovation by developing the ability to forecast the implications of these forces for managerial decision-making. Priority for specific skills to be developed must relate to the need for performance and development. Management knowledge and skills development is therefore necessary to observe trends in the environment to identify environmental dimensions that largely influence the progress (or not) of a business and their decision-making to maximise profitability.

Capacity development programmes can also enable management to identify threats and challenges in the environment in good time and where possible, transform these into opportunities (Smit, 2016: 71-72). Failure in constantly developing the skills of managers and workers in the petroleum industry could result in a situation where skills shortages in the petroleum industry will remain persistent and there could be a lack of innovative and performance culture. Consequently, the outcome of persistent skills shortages could be weak productivity, which also could slow the socio-economic transformation process. The section that follows explores the reasons of skills shortage persistence in the petroleum industry.

3.11 Reasons for skills shortages persistence in the petroleum industry

According to Reza (2007: 1), the concept of skills shortages is at the heart of the matter as it underpins the idea that the demand for certain skills exceeds supply. Reza further stated that the socio-economic perspective on skills shortages relay to a discussion of skills development, which relate to productivity in an organisation and that the public and private sectors also relate to the concept of productivity when discussing the matter of occupational skills shortages.

Reza (2007: 2) also indicated that skills development refers to both qualifications and experience, and that scarce skills or skills shortages refer to occupations in which there is a scarcity of qualified and experienced people, currently or in the future, either because such skilled people are not available or because they are available but do not meet employment criteria. Additionally, skills scarcity in the petroleum industry or wherever can arise either due to an absolute scarcity of skills or due to a relative scarcity.

Absolute scarcity refers to the suitable skilled people that are not available in an existing, new, or emerging occupation; a lack of sufficient numbers of workers with specific skills; or an insufficient number to satisfy replacement demand.

Relative scarcity refers to a situation where suitable skilled people exist, but do not meet other employment criteria due for example to technical experience and geographical location (Reza, 2007: 2).

According to Asmal (2010: 5), many reasons could be advocated to explain why in the petroleum industry or in South African society, skills shortages (also unemployment, inequality, and poverty) persist when there is still so much to be achieved. However, it is acknowledgeable that not all of the reasons have to do with the capabilities of workers/people; many have to do with the best practice of existing assets or human capital values best practices. Human capital values involve elements or dimension of positive human capital presented and explained in Table 3.4. According to Smit (2016: 56-60), many other reasons related to skills shortages have to do with the nature of business environment instabilities or socio-economic challenges (unequal distribution of productive assets in society).

For example, the poor have very few resources (capacities/abilities) to muster, while many have only their own low skills labour to use or sell. In all occurrences, the capabilities of people nevertheless remain a limiting factor in the attainment of desired outcome or of socio-economic improvement. Capacity development programmes strategy for human capacity improvement in the petroleum industry seeks to address the problem in an efficient way. Therefore, at the heart of the proposed capacity development programme strategy in the petroleum industry is the belief that enhancing the general and specific abilities of all workers is a necessary response to skills shortages (also to poverty, inequality, and unemployment), which should be set within the overall economic, employment and social development programmes of the petroleum industry and government.

On the other hand, to realise their potential, workers need knowledge, skills, and self-governing values (workers' self-governing values can be built/developed through training programmes that consider not only human technical skills development, but also all dimensions of positive human capacity). They also need opportunities in which to apply them. Thus, without a doubt, there are people who have skilled labour to sell, and they cannot find buyers because there are not enough jobs; their skills do not match the demands; and there is no systematic process for accurate information to flow between government, the workplace and labour. However, capacity development programmes can help in improving and developing the specific skills needed and make available skilled people that match the demands. The following sub-section discusses the factors causing skills shortages in the petroleum industry.

3.11.1 Factors causing skills shortages in the petroleum industry

There may be various factors, which lead to skills shortages in the petroleum industry. Reza (2007:6) identified a decline in undertaking skills training programmes initiative as one of the most important factors and that skills training programmes are not available at all qualification and occupational levels. Moreover, the lack of public-private partnerships in terms of skills training programmes in the petroleum industry and the lack of a long-term approach to skills development (organisations usually adopt a short-term approach to skills development) are significant factors that are causing skills shortages in the petroleum industry. Reza (2007: 6) emphasised that poor level of investment by organisations in personnel training is an important factor

slowing down skills development or causing skills shortages in the petroleum industry. With regard to solving these issues that are causing skills shortages in the petroleum industry, capacity development programmes appear to be an indispensable complement to apprenticeships and as a key method/approach to improve skills development for high, intermediate and low-level skills. However, factors that could reduce skills shortages or promote skills development relate mostly to public-private system of innovation, research, and development (Reza, 2007: 7). Therefore, capacity development programmes strategy in the public or private sectors, including the petroleum industry, is to provide a dynamic framework or plan to ensure that workers are continually equipped with creative and innovative skills and knowledge to participate fully in promoting change, modernisation, transformation, and development.

However, capacity development programmes whether in private or public sectors could be preventive to solving skills shortage problem. Therefore, human capacity development can be a preventive way out in solving the issue of skills shortages and for overall socio-economic development. The OECD (2015: 16) indicated that investment in skills development could help the petroleum industry and the overall economy become more creative and productive and moves up the value chain towards high-skill equilibrium and fosters a culture of achievement and innovation through skills acquisition and development. Thus, it is of great value to predict that capacity development programmes are the right approach to human capacity development and to business sustainability and prosperity.

However, it is through human capacity development that effective capacity development programmes or successful skills development programmes can bring together public and private sectors (OECD, 2015: 13). Therefore, there is growing evidence indicating that governments of developing countries are failing to fully equip their populations with the skills that are needed in an increasingly dynamic and inter-dependent economy and/or are failing to make good use of the skills that people have (Rodrik, 2007: 2). This implies that low awareness or lack of capacity development programmes usage in developing countries can be an essential cause of low skills development (skills shortages) and of socio-economic deterioration (OECD, 2006: 35). Thus, different approaches could be applied in tackling and solving the issue of persistent skills shortages in the petroleum industry.

3.11.2 Approaches in solving skills shortages in the petroleum industry

As far as the availability of skills training for human capacity development is a concern in various organisations, including the petroleum industry, socio-economic transformation will also be a concern. Therefore, there could be various approaches or dimensions to solving the problem of skills shortages in the petroleum industry. Reza (2007: 34) indicated two dimensions of solving the skills shortages in the petroleum industry namely, (a) training the unemployed and (b) training the employed from low to high skilled people. However, for the unemployed, it is imperative that the government through its training institutions must spend specific budgets to develop general and specific training programmes. This suggests that skills training programmes for the unemployed are socio-economically good in the classic sense.

Hence, that the government must take the lead to initiate skills training programmes that increase the availability of potential in skilled people ready for job opportunities. Without developing suitable skills training programmes, possibly one of the most powerful abilities of the government to effect meaningful socio-economic transformation will be compromised. For those in the workplace (employees in the petroleum industry for example), skills training programmes are important to upgrading the skills of low- and semi-skilled workers. Therefore, capacity development programmes could help in increasing the transferability of suitable and required specific skills. Practically, there must be a freeway for skills training providers to accredit their training programmes. Companies and the government need to build a strong partnership that promote skills development of unemployed and employed people.

The Report for Human Resource Development Strategy for South Africa (HRD-SA) 2010 – 2030, (2009: 7) stated that in any country, human capacity development refers to formal and explicit activities that enhance the ability of all individuals to reach their full potential. By enhancing the skills, knowledge and abilities of individuals, capacity development programmes can help in improving the productivity of people in their areas of work, whether these are in formal or informal settings. However, increased productivity and improvements to the skills base in any organisation supports economic development, as well as social development.

Therefore, it is essential that the petroleum industry must identify capacity development programmes with well-trained providers who can offer specific skills programmes for human capacity development. Capacity development programmes usage in both levels institutional and organisational can also play a fundamental role in equipping workers with the kinds of skills that enable them to contribute positively to socio-economic transformation. According to the United Way of Calgary and Area Report (2011: 8), capacity development programmes in the petroleum industry can fuel human capacity development with performing abilities through offering coaching and peer exchange opportunities in learning.

Particularly, opportunities can be identified in the area of board development, succession planning and leadership development, through workshops that are more tailored and targeted, greater in frequency and aimed at different levels of proficiencies as well as through offering implementation support such as technical assistance. According to the United Way of Calgary and Area Report (2011: 8), capacity development programmes can foster progressive investment in human capacity development through learning programmes in areas involving:

- Managerial personnel training;
- Technical expert training;
- Skilled personnel training; and
- Internationalised talent training.

Furthermore, capacity development programmes in the petroleum industry will necessitate escalating issues relating to:

- Opportunities for new learning programmes within the organisation;
- Challenges affecting the development and implementation of new skills training programmes;

- Building a framework through which existing and future employees could develop the capability of learning programmes (innovation/creativity as a personal or team capability);
- The learning environment of employees; and
- Strategies for increasing human capacity development through capacity development programmes.

Moreover, according to the OECD (2015: 4), encouraging public and private sectors to invest in skills development involve:

- Fostering employers' investment in quality training (increased provision of training in the petroleum industry);
- Encouraging investment in skills through shared public-private financing, especially for low-skilled workers (increased incidence of training for low-skilled workers);
- Improve training opportunities for workers (increased incidence of training for informal workers);
- Promoting job stability to increase access to work-based training (reduced incidence of precarious jobs); and
- Encouraging organisations to move up the value-added chain and increase their use of more highly skilled workers (increased share of jobs requiring higher skill levels).

Therefore, in addition to the aforementioned learning programmes and area of skills development, the following section highlights the types of critical skills needed for petroleum industry performance and socio-economic transformation.

3.11.3 Types of critical skills needed to alleviate skills shortages for petroleum industry performance and socio-economic transformation

Smit (2016: 17) indicated that although managers operate at all levels and in all departments and sections of an organisation, the optimal mix of management skills required at the different levels (top, middle, and lower management levels) differs. Erasmus (2018: 188) and Smit (2016: 17) indicated that there are three major skills needed by managers at all levels and in all departments and sections of an organisation, which comprise:

- Conceptual skills;
- Interpersonal skills; and
- Technical skills.

According to Smit (2016: 18), these three levels of critical skills involve the following understanding: Firstly, all managers need conceptual skills to be able to view the organisation and its parts holistically (referring to the ability to conceptualise, think and analyse abstract and complex situations). Therefore, conceptual skills take into account the manager's thinking and planning abilities to ensure that the organisation is prepared for the future. They also involve the manager's ability to think strategically about the organisation and the way to exploit opportunities and minimise threats caused by a changing business environment. However, conceptual skills are most significant at top management levels because managers must be able to understand the way in which things in the whole organisation fit together (Smit, 2016 and Erasmus, 2018). Secondly, managers need interpersonal skills.

This refers to the ability to work well with other people, whether in a group or individually. However, managers should also be able to listen carefully to other administrators and/or workers, communicate clearly, show real empathy, deal with conflict, understand people's behaviour, resolve conflict, optimise diversity, and motivate both groups and individuals. Therefore, managers with good human skills can get the best out of their workers because they know the way to communicate,

motivate and delegate (Smit, 2016 and Erasmus, 2018). Thirdly, managers need technical skills. This refers to the ability to use the knowledge or techniques of a specific discipline that help to reach specific goals; knowledge of proficiency in a specific field with the ability to apply specialised knowledge; and competency in a specific area (Smit, 2016 and Erasmus, 2018). Knowledge of a certain discipline such as engineering is an example of technical skills that can be used to perform a task. Therefore, managers at a lower level in particular require a sound knowledge of those technical activities (such as engineering) that can assist them in supervising task. In addition to the three major categories of skills needed by managers at all levels and in all departments and sections of an organisation, Reza (2007: 2) identified two other types of critical skills, which refer to specific skills within an occupation.

Thus, in any organisation, including the petroleum industry, there can be two groups of critical skills needed for organisational performance. These include generic skills, which involve problem solving and learning to learn, language, literacy or numeracy skills and working in teams for example, and specific occupational skills that require performance within that occupation (Reza, 2007: 2). However, all types or forms of critical skills are important when engaging in and applying capacity development programmes as an efficient approach to human capacity development and when solving the issue of skills shortages at all levels and in all departments and sections of an organisation. Moreover, one of the most important peculiarities from the aforementioned types or forms of critical skills is the specific occupational skills form that accounts for the problems that emerge when a firm (an organisation) experiences technological change or recognises production methods.

Reza (2007: 2-3) emphasised that skills shortages involve not only scarce and critical skills which suggest some form of advanced qualification in a high skills environment, also emphasising high skills and technical skills which are not sufficient for petroleum industry performance/development or for socio-economic transformation in the country. Therefore, skills development strategies for petroleum industry development and socio-economic transformation need to take into account low-skilled strategies improvement that should be viewed in a positive light, specifically with respect to addressing skills shortages and stimulating labour-intensive forms of production. However, solving the problems of skills shortages should comprise everything from the most advanced qualifications to the most elementary.

Skills development is something that may be needed from different people at different stages of their life cycle, or over the business cycle, or both. Thus, capacity development programmes (involving conceptual skills, interpersonal skills, and technical skills; including the two types of critical skills, which refer to specific skills within an occupation) could provide available means or tools to managers and workers in developing and improving their competences at all levels and in all departments and sections of an organisation. Therefore, capacity development can assist in applying necessary knowledge and skills profitably in a work situation.

3.11.4 Areas of management that need managers' skills development

According to Erasmus (2018: 188), some management abilities that can support or assist managers to cope with their work include communication skills, the ability to work in a team and conflict solving abilities, which relate to interpersonal skills; good time management and problem-solving abilities (understanding the bigger picture) relate to conceptual and technical skills. However, although these skills are necessary for productive management, managers are confronted with various challenges in a dynamic environment. Therefore, areas in which managers are confronting challenges include building the organisation to experience competitive advantage, maintaining ethical and social responsibility, managing a diverse workforce, and managing in a global environment. Table 3.8 illustrates areas of management that are challenging managers (at the workplace) in various organisations, including the petroleum industry.

Table 3.8 Areas of management that are challenging managers in the petroleum industry

Challenges for managers	Components
Build the organisation to experience a competitive advantage	- Cost savings: Cost savings are directly linked to efficiency. Customers' value lower priced products and services, which implies improved customer satisfaction. - Differentiating quality: An organisation has to offer customers something different. - Innovation and responsiveness: Organisations that are successful in responding to the needs of their customers will experience competitive advantage.
Maintaining ethical and socially responsible behaviour	- Pressure to perform can be healthy for an organisation. - It can become negative if it gets overwhelming and if goals must be achieved at all costs (for example, decreasing the quality of products and services is unethical). - Challenges to managers globally are to maintain proper standards in doing the right thing every time.
Maintaining a diverse workforce	- An organisation's workforce is not homogenous. - An advantage of a diverse workforce is that different ideas, skills, preferences can increase creativity. - Managers must be sensitive to and value diversity. - Challenges of managing a diverse workforce comprise: Building an organisational culture that supports diversity; Putting the necessary structures policies and systems in place that support diversity; Complying with the law with regard to equity and BEEE (black economic empowerment equity); and Providing training for and retaining diverse employees.
Managing in a global environment	- Managing in the global environment suggests not only keeping up with innovation, but also with change. - Information technology and the internet are changing the business environment so quickly that managers should realise that they have to focus on speed. - The challenge for managers is to learn new things daily to keep up with the changing environment. - Management must guide and instil an organisational culture of learning

Source: self-generated by the researcher, based on Erasmus (2018)

Table 3.8 presents areas of management that are challenging to managers, whether in the petroleum industry or in various other industries. It illuminates the challenges and components that must stimulate managers to continually improve their skills or

capacities and keep up with a sense of responsiveness in a global dynamic environment.

3.12 Conclusion

Chapter Three has provided an overview of theoretical description of terms in the conceptual framework that are interrelated to capacity development programmes, petroleum industry and socio-economic transformation. It provided the significance, understanding and depiction of key concepts in relation to various literature examined with the intent of giving illustrating the linking of capacity development to petroleum industry development and socio-economic transformation. The Chapter has given a broad and specific overview of the study by identifying the principles and theories that guide the major core concepts, as well as the determinant factors and causes related to these concepts.

Thus, it can be emphasised that capacity development programmes in the petroleum industry can solve the issue of technical skills shortages by constantly empowering the workforce with training skills programmes that gives them the ability to cope with the speed of technological innovation, skills competitiveness, as well as the capability to cope with business environment instabilities or uncertainties. Capacity development programmes could be a useful approach or tool necessary in assisting the workforce to improve their aptitudes in achieving their own vision and dream by discovering their creative and innovative talents and by learning how to use them to their fullest potential.

The next chapter explores international perspectives of capacity development programmes in the petroleum industry and examine the usefulness on capacity development programmes in the South African petroleum industry. It will include a review of theories supporting the usage/best practice of capacity development programmes for petroleum industry development and socio-economic transformation.

CHAPTER 4

CASE STUDIES OF CAPACITY DEVELOPMENT PROGRAMMES IN THE PETROLEUM INDUSTRY

4.1 Introduction

Exploring capacity development interventions in the international petroleum industry is necessary and helpful to measure the crisis of skills shortages and identify the socio-economic impacts of capacity development interventions on specific petroleum industries in other world regions. Both successful and unsuccessful case studies of capacity development are examined in this chapter. Lessons from capacity development interventions in each case study are also provided. A background to capacity development interventions from the international petroleum industry helps to understand the process by which the petroleum industry has implemented capacity development programmes in solving the issue of skills shortages and in promoting or improving human capital capacities and organisational innovation, performance, competitiveness, and productivity. A link indicating capacity development interventions' effects in the petroleum industry and socio-economic transformation is also provided in each case study.

4.2 Background to capacity development interventions in the international petroleum industry

In most circumstances, the need for capacity development or capacity building in various world regions, countries or organisations occurs for two main reasons. Firstly, capacity development might be required for socio-economic opportunities that create occasions for more investments on socio-economic activities growth and development, which consequently will necessitate more adequate capacities and competences for various operations improvement and for managing these operations. Secondly, the need for capacity development may occur because of possible immense operational challenges that organisations could have, and which will require adequate capacities to address these challenges. For example, the need for capacity development/building in the African West Indian Ocean region (WIO) was necessitated because of the discoveries of new oil and gas exploration and production in the region,

which have brought about new ambitions for the development of the region. However, ambitions for regional development linked to the exploration and production of oil and gas activities have faced immense challenges. According to the UNEP (2017: 5), the need for capacity development/building in the West Indian Ocean region (WIO) was related to both socio-economic opportunities and operational challenges that faced the oil and gas industry development. These included:

- Insufficient capacity or scarce skills and ability, capability or competence in managing the oil and gas value chain;
- Inadequate capacity to improving the level of public awareness, participation and sensibility concerning the development of the oil and gas industry;
- Poor ability/capacity to address local content, exploration and production technology, research and development;
- Insufficient management capacities/tools, guidelines, and resources to support legal, regulatory, and institutional framework in the WOI region;
- Poor capacity in managing environmental, safety, waste and resources management systems to ensure sustainable development of the oil and gas industry in the WOI region;
- Limitations/constraints in managing terrestrial and marine conservation areas, national parks and forest reserves as well as their constituent biodiversity; and
- Poor capacity in managing dispute mechanisms to handle oil and gas related disputes.

In addition, Peek (2008: 3) denoted that the study of capacity development interventions in the international petroleum industry was made possible through the support of international partners/organisations, such as the United Nations Institute for Training and Research (UNITAR), AFREN and the Centre de Recherches Entreprises et Sociétés (CRES).

According to the UNEP (2017: 5) and Peek (2008: 3), the need for a mechanism of capacity development/building programmes in any country will be constantly required to ensure effective enhancement of knowledge, skills and good governance or management of operations that need change, improvement, and development. In addition, managing expectations, environment standards and natural resources will continually require sustainable capacity development programmes (human capital capacity development or people/employees' skills development). Therefore, Peek (2008: 3) indicated that UNITAR, since its inception in 1965, has been contributing to developing the capacities of thousands of people around the world, building sustainable partnerships, acquiring unique expertise, and accumulating experience and knowledge to fulfil its mandate. Its mandate consisted of responding to the growing demand from UN member States for skills training programmes in terms of capacity development in various fields, including the petroleum industry field.

In effort towards supporting capacity development interventions in various fields, UNITAR has established a framework for developing long-term collaborations through the implementation of concrete programmes and projects to increase public and private sector contribution to sustainable socio-economic development at large. According to Peek (2008: 3), AFREN is an independent oil and gas exploration and production organisation that was founded in 2004 by the members of the Organisation of Petroleum Exporting Countries (OPEC). The vision of AFREN was made up to become the premier Pan-African independent exploration and production company through partnering with indigenous companies and governments and acquiring equity stakes in exploration and development assets. In addition, AFREN has expanded its portfolio across six African countries, including Nigeria, Sao Tome and Principe JDZ, Gabon, Congo-Brazzaville, Cote d'Ivoire, and Ghana.

Furthermore, according to Peek (2008: 3), CRES is a foundation under Swiss law with headquarters in Geneva, with objectives to monitor the economic, political, religious, and social environments of countries where organisations/companies might wish to operate. Moreover, Peek (2008: 3) also indicated that CRES' vocation is to offer a concrete analysis of the changes going on at a time when profound geo-political upheavals are occurring throughout the world. Additionally, CRES constitutes a permanent forum for meetings between experts and decision-makers coming from

widely differing geographical and socio-professional horizons. Therefore, CRES stands to be at the centre of a network promoting dialogue and the exchange of ideas about oil and gas development (Peek, 2008: 3). Capacity development interventions in the petroleum industry by these organisations started in terms of examining the causes and reviewing options of how to deal with the issue of skills shortages which has plagued the petroleum industry for several years. Thus, it was argued that the slowing down of oil and gas demand in the global oil and gas industry does not only mean a return to cheap energy, but also the dissipation of the skills gap. Furthermore, it was also observed that the socio-economic crisis in some countries could remove the skills shortages problem from the list of challenges facing the petroleum industry (Peek, 2008: 5).

Therefore, the UNEP (2017: 7), emphasised that capacity development in the petroleum industry could assist not only as a tool that promote socio-economic development, but most significantly a key factor that support, establish, and strengthen capacities in legal and regulatory framework, including enhancing standards, guidelines and best practices of existing policy, legal and institutional frameworks within the countries/organisations. Consequently, the best practice of capacities can enable organisations in the petroleum industry to manage potential fluctuations of oil and gas prices. However, there is no doubt that an assumption that any fluctuation of oil and gas prices could affect the demand for petroleum products. Therefore, the skills gap challenge could remain an unsolved problem and be seen like outdated if no efforts can be engaged to reverse negative situations (Peek, 2008: 5).

Accordingly, the fluctuation of oil and gas prices must not be an excuse for non-action to fight the problem of skills shortages and that even if the socio-economic crisis could slow down temporarily, the demand for skilled personnel in the oil and gas industry could remain practically unceasing. This means that the basis of capacity development in the oil and gas industry is awareness to potential socio-economic activities development and to environmental transformation, safeguard, and sustainability (UNEP, 2017: 5). Nevertheless, if nothing can be done in terms of capacity development programmes best practice, the oil and gas industry will be continually confronting and facing the same challenges related to skills shortages. In other words, crises of skills shortages could persistently and deeply affect other dimensions of

crises facing the oil and gas industry (Peek, 2008: 5). According to the UNEP (2017: 6-7), the rationale for capacity development needs in the petroleum industry is for strengthening human capital capacity development for the best practice of policies that support socio-economic operations. However, capacity development interventions in dealing with the issue of skills shortages was therefore necessary to identify and implement appropriate measures to prevent any crisis related to skills shortages in time. Nevertheless, capacity development interventions appeared to also be necessary in the situation where if the skills shortages could manifest again, policies and programmes improvement could be needed to redress the situation, otherwise, valuable time would be lost.

Additionally, it was attested that capacity development interventions in the oil and gas industry can increase and promote the degree of transparency, accountability, efficiency, productivity, and competitiveness of large or small local oil and gas enterprises (UNEP, 2017: 7 and Peek, 2008: 5). Thus, capacity development interventions are examined in the next section to reflect the impact, outcome, and outputs of capacity development interventions, as well as the process by which capacity development programmes have attempted to contribute to organisations or countries like the Cambodian, Angolan and Nigerian petroleum industry development, and the impacts these organisations have had on socio-economic transformation process.

4.3 Capacity development interventions in the Cambodian National Petroleum Authority (CNPA)

The case study of the Cambodian National Petroleum Authority (CNPA) in this study reveals the nature of capacity development interventions. However, the technical assistance was the type/nature of capacity development interventions implemented in the CNPA and aimed to support the petroleum industry development process in Cambodia. According to Kim (2013), the objectives for capacity development technical assistance consisted of upgrading the skills of employees and fostering greater private sector participation in the petroleum industry by essentially emphasising upstream and downstream operations.

Therefore, the practice of capacity development interventions for the Cambodian National Petroleum Authority development involved the process discussed in the following sections.

4.3.1 Capacity development interventions requirement by the CNPA

The requirement for capacity development technical assistance in the CNPA was made to address the challenges confronting public and private organisations in a coordinated and holistic manner in Cambodia. The need for capacity development technical assistance was also to enable good management, improving service delivery through an efficient and effective use of limited resources. According to Carneiro (2015: 12), the purpose or requirement for capacity development interventions is for the improvement of the ability of people, organisations, institutions, and society to manage their affairs successfully. Furthermore, it is indicated that the intervention of capacity development mainly comprises improvements in one or more of the following areas: Individual knowledge and skills; systems (methods, routines, and procedures); structures (authority, rights and duties, communication); infrastructure and equipment (hard- and software); work environment and external factors (Carneiro, 2015: 12).

Therefore, according to Kim (2013), the CNPA as a regulatory institution has required capacity development interventions from the Asian Development Bank (ADB) to support and fund an analysis of the strategic functions of the CNPA. A road map was established for the development of the petroleum industry (including the upstream and downstream operations in the country) and to outline (petroleum industry law) both the upstream and downstream (Kim, 2013).

4.3.2 Delivery of inputs and conduct of activities in the CNPA

The delivery of inputs and conduct of activities usually depend on the terms of reference. Therefore, in relation to the CNPA requirements for capacity development interventions, Kim (2013) stated that there was a term of reference that indicated the necessities of a call process for a petroleum advisor. The petroleum advisor should have general and specific petroleum sector experience, a broad background in the development of national petroleum institutions and various thematic advisers engaged

on an as-needed basis and upon the request of the CNPA to address explicit issues and petroleum sector themes, namely:

- Petroleum economics;
- Petroleum production accounting;
- Environmental management;
- Petroleum exploration and development;
- Petroleum financing; and
- Human resource capacity development.

Kim (2013) also pointed out that about 14 person-months of international consulting services have been proposed to accomplish the expected outputs of the technical assistance, of which about six (6) person-months have been planned for a petroleum adviser involved on an intermittent basis and the other 8 person-months have been allocated for thematic advisors. The choice and appointment of consulting services under technical assistance have been carried out in an agreement, with the guidelines of the Asian Development Bank (ADB) on the use of consulting services. Furthermore, according to Kim (2013), the consulting services inputs have employed various experts. About 7.41 person-months for the petroleum advisor; 4.91 person-months for the thematic advisers on petroleum economic model experts (1.64 person-months); environmental expert (1 person-month); safety expert (1.04 person-months); and human resources experts (1.23 person-month) were employed.

Additionally, 12.32 person-months of international consulting services compared with 14 person-months as originally indicated in the technical assistance report were employed. Inputs of two person-months from a national environment expert were instructed and mandated to review and translate relevant documents on environmental laws and regulations. In addition, the procurement of necessary computers and office

equipment, which were required under the technical assistance has been undertaken through shopping, following the guidelines of the ADB on procurement. However, capacity development interventions in the CNPA in terms of technical assistance for the workforce training programmes included at least the provision of 25 books, periodicals, interactive learning packages and subscriptions to key industry/trade data sources, which were procured and turned over to the CNPA along with computer hardware and software (Kim, 2013).

4.3.3 Permits to strengthening capacity development of the CNPA staff

It is stated that permits to strengthening capacity development of CNPA staff were required to ensure protection of the environment and public health and safety (Kim, 2013). In addition, a permit was needed in the process of obtaining the necessary official supports or endorsements and approvals from the organisation intending to receive capacity development intervention services, which allowed a certain organism (ADB) to start and continue activities until the day these activities are achieved. Moreover, the Cambodian government requested the Asian Development Bank to continually assist and help strengthening the capacity development of staff of the Cambodian National Petroleum Authority. According to Kim (2013), the requirement to start capacity development technical assistance consisted of specifically to:

- Help prepare key technical analyses and operating guidelines, such as contractual and fiscal regimes and inter-agency coordination protocols, and undertake workforce-planning assessments;
- Develop and roll out an institutional development plan; and
- Provide training, along with such knowledge resources as computer equipment and software, to enhance staff skills and managerial capacity.

Additionally, Kim (2013) indicated that the technical assistance programme has served as a coordinating platform and helped integrate the delivery of upcoming assistance to the sector planned by several development partners and the private sector. Also, the strengthening of the CNPA was well-aligned with the priorities of ADB's Operations Business Plan (OBP), which intended to promote good governance, institutional

capacity building, and the development of an enabling environment for private sector development. Lastly, the technical assistance from ABD envisaged expanding the capacity of the CNPA to manage exploration and potential production of onshore oil and gas around the Tonle Sap region of Cambodia with a geographical focus of the country operation business plan (Kim, 2013).

4.3.4 The ADB capacity development technical assistance to the CNPA

According to Bester (2015: 2), capacity development technical assistance involves a partnership with organisations (public or private) that are in developmental cooperation, including governments (national, regional, and local), multi-lateral organisations, philanthropic foundations, non-governmental organisations and the private sector through social impact investment and social responsibility. Therefore, according to Kim (2013), the Asian Development Bank (ADB) supported the Cambodian National Petroleum Authority (CNPA) through capacity development technical assistance by providing an on-the-job training and advice to staff, based on gender equality and advice and guidance on information and technology (IT) needs and the installation of basic IT equipment and services during 2008–2010. However, Kim (2013) indicated that activities of technical assistance have promoted the sustainable development and welfare of the Cambodian petroleum industry, through capacity development programmes. The technical assistance activities covered both longer-term development-related activities and human development assistance.

4.3.5 Expected socio-economic impact, outcome, and outputs of capacity development interventions in the CNPA

According to Bester (2015: 2), the outcome describes the intended changes in development conditions resulting from capacity development interventions. They can relate to changes in organisational or institutional performance. This implies that outcome from capacity development interventions in any organisation; including the petroleum industry represents a collective strategic result for the organisational system and cooperation at organisational level, which intends to support organisational priorities. However, Bester (2015: 2) indicated that the output involved specific goods and services produced by the programme.

This suggests that outputs can also represent changes in skills, abilities or capacities of individuals or institutions, resulting from the completion of activities within a development intervention in the organisation. Furthermore, the impact or result represents the output, outcome, or influence (intended or unintended, positive and/or negative) of a development intervention (Bester, 2015: 2). Kim (2013) indicated that the impact of capacity development interventions on the technical assistance of the CNPA included the increased revenue from the petroleum sector in Cambodia for overall economic development. Concerning the outcome, capacity development interventions supported the enhancement of institutional and staff capacity development within the CNPA to perform its role as a regulator for oil and gas sector improvement in Cambodia. According to Kim (2013), the vision of the CNPA in terms of capacity development interventions involved the following key outputs of the operational technical assistance:

- An effective contractual regime, comprising fiscal regimes and interagency operation protocols, and workforce planning measures that complemented these improvements operation; and
- The strengthening of the institutional capacity of the CNPA.

However, according to Kim (2013), the key activities under the initial output included:

- The petroleum economics analyses for upstream oil and gas operations, including an updated modelling of the effects of alternative contractual and fiscal regimes;
- The formal interagency protocols for environmental and safety inspections and approvals; and
- The workforce planning assessments and studies to determine the capacity to participate in the petroleum sector of Cambodia, including examination of sector manpower needs and the capacity of higher and vocational education to meet projected requirements.

Additionally, Kim (2013) indicated that the key activities under the second output involved:

- The creation of an institutional development plan and specific training of CNPA staff through an array of modalities on an as-needed basis, including on-the-job training and mentoring by resident expert advisers;
- The development and delivery of short courses, certificate and diploma programs, and study tours or internships at private companies and other regulators; and
- The provision of books, periodicals, and audio-visual and interactive learning packages.

4.3.6 Evaluation of outputs and achievement of outcome

According to Bester (2015: 2), the indicators that can assist better on the evaluation of outputs and achievement of outcomes comprise quantitative or qualitative factors or variables that provide simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor or intervention. Therefore, evaluation represents the systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation, and results (Bester, 2015: 2). In light of the aforementioned, the evaluation of outputs and achievement of outcomes aim to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact, and sustainability.

However, an evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision-making process. Therefore, according to Kim (2013), the evaluation of outputs and achievement of outcomes showed that the petroleum advisor provided expert advice to the Cambodian National Petroleum Authority (CNPA) on various petroleum topics and the whole spectrum of CNPA's business.

Consequently, Kim (2013) specified that the following indications represented the statements of each expert because of the evaluation of outputs and outcome form CNPA:

- The petroleum economic model expert provided major inputs to CNPA in settling and finalising its petroleum economic model, including provision of oil price forecasting and rationalising production profiles;
- The environment experts prepared an outline and environmental impact assessment (EIA) checklist for the guidelines of Cambodia's EIA for oil and gas projects, including recommendations on oil spill contingency planning;
- The petroleum safety expert provided recommendations in setting up CNPA's health, safety, and environmental protocols for safe petroleum operations;
- The petroleum human resources expert prepared a public and private sector workforce skills development framework for Cambodia's petroleum sector.

Finally, a workshop facility was undertaken to disseminate the outputs and recommendations from the petroleum advisor and each of the thematic advisers. All appointed experts also delivered hands-on training and knowledge transfer to CNPA staff for the duration of their assignments. By way of improving the capacity of CNPA staff, enhanced bilateral dialogue and multinational events participation, as well as increased collaboration with tertiary institutions to include geology in the curriculum and take on new graduates as interns at CNPA, have been indicated or noted (Kim. 2013).

4.3.7 Overall assessment and rating of capacity development interventions in the CNPA

The purpose of the assessment and rating process was to determine whether and at what rating level capacity development interventions services met the requirements of the CNPA, which aimed to develop its capacities. A key focus of capacity development interventions is therefore to promote continuous quality improvement of the workforce.

According to Rothman (2012: 1-2), an assessment and rating process allows reporting the quality of services across the organisation. This process involves the review of service records, particularly its quality improvement plan, observation of service practice with the workforce and undertaking consultations with instructors (capacity development programmes providers' experts) and staff to determine whether the service met the requirements stated.

However, concerning the CNPA, Kim (2013) notified that the technical assistance from experts and ADB was rated successful based on the evaluation of outputs and achievement of outcome within the original technical assistance completion period. Furthermore, it was shown that capacity development interventions in terms of technical assistance have successfully provided the CNPA an economic model; a human and institutional development plan; environmental standards and guidelines for petroleum exploration and development; and petroleum industry safety regulations.

4.3.8 Major lessons from capacity development interventions in the CNPA

The major lessons refer to the process undertaken to implement capacity development interventions in the CNPA. Therefore, Kim (2013) stated that capacity development technical assistance to the CNPA involved the covering of various fields of expertise and engagement of individual consultants, which were a better arrangement from the CNPA rather than the engagement of a consulting firm in implementing different needs of capacity development requirements. The Cambodian National Petroleum Authority and the Asian Development Bank have confirmed that the performance of the consultants has been satisfactory, particularly for the petroleum advisor.

The CNPA also acknowledged that the effective and efficient performance of ADB staff in implementing capacity development technical assistance was significant. Thus, Kim (2013) specified that three technical assistance review missions were fielded during the technical assistance implementation period and that the performance of the Asian Development Bank and the Environmental Assessment were rated satisfactory. Therefore, successful local outsourcings not only can benefit oil and gas companies directly but can also stimulate economic growth and extend the benefits of oil and gas production to the wider social transformation.

According to Peek (2008: 6), capacity development interventions is an approach that can be used by taking into account the economic environment, whether in the state of growth or of crisis. Capacity development interventions can also provide opportunities to support local companies and to convert them into reliable and competitive suppliers of goods and services for the community. Figure 2.10 above-mentioned, illustrates the direct, indirect, and induced opportunities or benefits capacity development interventions could procure, while implemented within an organisation. However, the goal for applying capacity development interventions in the CNPA was to improve the value of global organisation (including employees' capacity development, increased performance and productivity, enhanced contribution of the CNPA to national economy and improvement of community lifestyle), the effectiveness and reliability of their supply chains and to ensure organisational competitiveness and reliability (Kim, 2013).

4.4 Capacity development interventions in the Angolan petroleum industry

According to Corkin (2017: 3) and Peek (2008: 56), between 1960 and 1962, energy production in the African continent was well developed in Angola and Nigeria. During that period, although the invasion of international oil and gas companies in Angola, and prospects for the energy industry seemed to be excellent, there were a number of important challenges which the industry has faced. According to the PWC Report (2016: 6), Corkin (2017: 1) and Peek (2008: 56), in Angola as well as in other African oil and gas producing countries, the most important challenge remains the poor performance of oil and gas production in generating economic development. In addition, one of the biggest challenges for oil-dependent countries in the continent, including Angola, is the lack of economic diversification.

Other key challenges, which the Angolan oil and gas industry has faced, include political appointments of candidates who lack petroleum industry experience, as well as the rising skills shortages and the growing difficulty of meeting local content requirements (Corkin, 2017: 1 and Peek, 2008: 56). However, both problems were linked in the sense that skills shortages remained one of the main reasons why local content requirements remained unfulfilled. Therefore, the growing skills gap became one of the main problems facing the oil and gas industry development in Angola.

Thus, skills shortages and local content requirements were identified as a critical problem affecting directly and particularly the Angolan petroleum industry. While other countries were relying more on locally trained professionals to meet skills demands, Angola and other African countries have had few people sufficiently trained in the oil and gas industry and companies have traditionally resorted to expatriates to fill most of their positions (Peek, 2008: 57). However, the lack of capacity development interventions is shown as one of the reasons for the oil and gas industry to keep on remaining more dependent on expatriate labour in the African oil and gas industries. With the potential and expected growth of the oil and gas industry, this reliance is likely to become even more important in the absence of local content skills training programmes or skills training development.

4.4.1 Factors that contributed to skills shortages in the Angolan oil and gas industry

According to Ovadia (2016) and Peek (2008: 51), factors that contributed or are contributing to skills shortages in the Angolan petroleum industry as well as to other African countries include corruption, local fronting, foreign labour, access to capital, skills, training, and human capacity, and managing expectations. However, while the prospects for the energy industry were observed to be excellent, there were also perceived important challenges within the oil and gas industry. Most importantly, political uncertainty, corruption, and violence were detected among the most significant challenges. In addition, poor performance of oil and gas production in generating economic development of which the benefits remain broadly shared by the local population was underlying as an additional barrier to oil and gas development in the country (Peek, 2008: 51).

Nevertheless, in the light of the aforementioned description, the rising of skills shortages became one of the main problems facing the oil and gas industry throughout the African continent and particularly in the Angolan petroleum industry. However, Angola and other oil and gas producing countries in the African region have embarked on ambitious plans to raise production and capacity to meeting growing global demand and to respond to the very substantial price increases observed previously. However, it was shown that an additional challenge to the Angolan oil and gas industry was the

growing difficulty of meeting local content requirements. Nevertheless, qualified workers were not available to meet both these targets, and the government was accelerating demands for local content (Peek, 2008: 52). Therefore, guidelines and quotas were increasingly imposed to hire a given percentage of qualified workers and to use a proportion of inputs locally. The government saw it as an imperative means of supporting national development. Many of oil and gas operators faced a growing political pressure to ensure that the population gets an adequate share of the benefits of oil and gas production. Moreover, the lack of adequately trained professionals was indicated amongst the serious challenges affecting the oil and gas industry in Angola and in the African continent. Since the petroleum industry has recognised this constraint in the country and in the region, there has not been any major initiative to address with awareness of the situation.

Until now, oil and gas companies in the African region, including the Angolan oil and gas industry continue to rely heavily on expatriate labour and the few ad-hoc initiatives to train and hire local professionals have been unlikely to bring about a major improvement. According to the PWC Report (2016: 30), the uncertainty regulatory outlook in terms of local content capacity development ranks among the top five challenges and it is known that the low level of development remains the foremost cause for the lack of skilled workers in the oil and gas business in Angola and in Africa. Therefore, Peek (2008: 52) acknowledged that governments in the continent dispose of insufficient funds to finance and support inadequate educational system and that the level of public expenses on education remains very low. It is also acknowledged that oil and gas producing countries in sub-Saharan Africa spend even less on education than the non-producing countries.

4.4.2 Role played by international partners in reducing skills shortages in the Angolan oil and gas industry

According to the PWC Report (2016: 30) and Peek (2008: 54), policy development in promoting local technical skills development was a supporting key from the international community and particular donor countries in the process of reducing skills shortages in the 1960s and early 1970s. As indicated earlier the lack of skilled workers

in the sub-Saharan African petroleum industry was highlighted as one of the critical challenges. Therefore, according to Peek (2008: 73), Angola has been amongst the first countries to introduce legislation on local hiring. In 1982, Angola has adopted a decree 20/82 on the mandate of hiring and training Angolans by foreign companies operating in the oil and gas industry. It was suggested that oil companies could not hire foreigners unless qualified Angolan workers were not available in sufficient numbers. It was also indicated that skills training programmes should be provided in a way that progressively the rule of proper employment of national workers supposed to be applied at all hierarchical levels (Peek, 2008: 73). In light of the aforementioned, the PWC Report (2016: 30), highlighted that similar to Angola, countries such as South Africa, Nigeria, Tanzania, Libya, and Egypt have also attempted to improve policies concerning petroleum industry development and local content capacity development. Table 4.1 indicates the attempt at policy improvement in terms of promoting petroleum industry development.

Table 4.1 Policy improvement attempts towards petroleum industry development in selected African countries

Countries	Attempt to policy improvement for petroleum industry and local content skills development
Angola	In 1982, Angola has adopted a decree 20/82 on the mandatory of hiring and training Angolans by foreign companies operating in the oil and gas industry. This suggested that oil companies could not hire foreigners unless qualified Angolan workers are not available in sufficient numbers. It also suggested that skills training programmes shall be provided in a way that progressively the rule of proper employment of national workers supposed to be applied at all hierarchical levels.
South Africa	There have been commitments to address industry concerns since 2015 and the intention of the Government to separate regulations for oil & gas from the mining industry was communicated. The fact remains that the Minerals and Petroleum Resources Development Act (MPRDA) has not yet been changed and approved to reflect such modifications.
Nigeria	The Government has failed to pass the Petroleum Industry Bill (PIB), but there appears to be new impetus under President Buhari to achieve operational, fiscal, and regulatory reforms. Until the PIB is passed, however, regulatory uncertainty remains.
	The regulatory environment remains uncertain despite the promulgation of the Petroleum Act in 2015. The Act allows for increased involvement of the central government, fuelling

Tanzania	investor fears of further project delays. The likelihood of increased local content requirements due to violent protests in 2013 over the Mtwara pipeline, very limited infrastructure, and an insufficiently skilled labour market emphasise the need for a stable regulatory environment if Tanzania is to avoid further delays and stay on the map for future LNG developments.
Libya	A recent announcement that the two opposing sides are progressing towards unifying the National Oil Company by signing a memorandum of understanding is a positive step. But there are still severe concerns over security, damage to existing infrastructure and poor fiscal and licensing terms, despite the country holding the largest proven oil reserves in Africa. Regulatory reforms are crucial for the country to attract investment.
Egypt	Considerable investment was committed over 2015, which seems to indicate that the Government intends to create a conducive environment for investment is succeeding. The Government is seen to have streamlined its approval processes, has committed to paying back its debt to the oil & gas companies and has allowed gas pricing structure negotiations based on field conditions. Gas produced from new concessions can be sold directly without going via Government.
Equatorial Guinea	It was stated that the 2006 law regulating oil and gas production stipulated that companies operating in the oil and gas industry should not only provide skills training for their employees, but also for government officials who have to deal with the entire oil and gas sector. However, there were not any settled targets.
Cameroon	The local content provision was that contractors in the petroleum industry were required to favour the employment of Cameroonian workers (Thus, both cases of Equatorial Guinea and Cameroon have appeared to be a more general provision which could not have targets attached as it was the case for in Nigeria and Angola).

Source: Adapted from PWC Report (2016: 30) and Peek (2008: 73)

In the case of Angola, Table 4.1 highlights that the process of improving regulations for the petroleum industry and local content skills development involved skills training plans for which skills training programmes should firstly be submitted to the government for approval. In addition, the target for skills development programmes should involve three categories of Angolan workers, including unskilled workers, mid-level workers, and higher-level staff (Peek, 2008: 73). According to the PWC Report (2016: 31 - 32), compliance with local regulations is an acknowledged requirement to operate in the oil and gas sector development process. Regulating local content and skills development can be one of the best ways to solve skills shortages issues in the petroleum industry.

According to the PWC Report (2016: 32), a skilled local workforce and suppliers nearby make business sense and are in the interests of governments to improve policies that promote the petroleum industry and skills development of the workforce in the country. However, the best way to achieve this goal is different for every country. Therefore, country-specific local content regulations dictate the path but are not necessarily achievable. In addition, all over the continent, and particularly in Angola or South Africa, skills shortages on all levels of the workforce remain an issue. Thus, the presence of more expatriates in middle and senior management and among technical specialists remains consistent in several petroleum industries.

4.4.3 Role played by the Angolan government in reducing skills shortages in the oil and gas industry

African governments and particularly the Angolan government have had a role to play in developing local talent for the oil and gas industry development (Peek, 2008: 54). According to Corkin (2017: 8), the role-played by the Angolan government in tackling skills shortages in the process of oil and gas industry development, included the amendment of regulations governing the oil industry. The reforms of regulations governing the Angolan oil industry were designed to entice international investors, by focusing on an institutional and organisational overhaul as well as improving the fiscal incentives for potential investors. In the process of doing so, their funding capacity has been strengthened because of renewed economic growth, not only in oil-producing countries but also in elsewhere on the continent.

New opportunities have been created to set new priorities and strengthen the skills training system. However, the key challenge was to design skills training programmes necessary to be responsive to the labour market and to focus on the scarce skills. However, such as stated earlier, political uncertainty and corruption around the oil and gas industry were highlighted as key obstacles to oil and gas industry development and obviously to any initiatives for local content skills training programmes improvement. Unfortunately, in Angola as well as in many other African countries, the reforms of regulations governing the oil and gas industry are not specifically done in the intention to promote local talent capacity development. But exceptionally, reforms are done on the intention to promote the development of new commercial discoveries

within existing concession areas and to maximise production by assisting oil firms to recover their exploration or investment costs more quickly (Corkin, 2017: 8 - 9). Failure in oil and gas industry performance and development in the continent (including the Angolan petroleum industry) is originated mostly on the lack of awareness on human capacity development. The reforms of regulations governing the petroleum industry should involve both human skills development programmes and oil field capacity development programmes. Unfortunately, in the case of Angola, the intention for regulations revision involved only aspects related to profit-sharing and costs-recovery mechanisms, as well as petroleum tax relief to incentivise the oil industry major's development of reserves previously not considered sufficiently economically viable (Corkin, 2017: 9). Yet, the Angolan government efforts in supporting initiatives on human skills training programmes remain a vital requirement in terms of reducing skills shortages within the oil and gas industry.

Therefore, governments, donors and companies should also have a renewed interest in developing both technical education and vocational training systems and offer opportunities to develop new training programmes. According to peek (2008: 77), a priority for effective action by stakeholders in reducing the skills gap should include the strengthening of curricula (improving skills training programmes/courses). This change in curricula could facilitate the accreditation of local content and encourage companies to hire more local talent. Thus, the measures taken to enhance education and/or skills training programmes at the workplace involved the improvement and increase of skills training facilities, the quality of the teaching staff needed to be enhanced and a fair partnership with oil and gas companies for internship was also listed as an important measure (Peek, 2008: 77). The strategy proposed as a pillar to overcome skills shortages was to develop closer coordination amongst oil and gas companies.

Peek (2008: 78) indicated that a World Bank study on collaboration and partnership amongst stakeholders revealed that most oil and gas companies have adopted a strategy of tackling skills shortages alone. However, the World Bank study also found that overlap and lack of coordination created problems that were hindering the effective implementation of skills training programmes and other initiatives. Contemporary, oil and gas companies are required to continually explore the opportunities of initiating skills training programmes and activities jointly with the

government and other companies in the industry in pursuing an effective implementation of their projects. Peek (2008: 78) suggested that to facilitate such coordination and joint action, a national body or institution on energy production was necessary for the country. It was indicated that none of the existing institutions in the oil and gas sector has had a mandate that could cover such activities in the country. Therefore, such institutions, if given support from the oil and gas companies could firstly act as a clearinghouse for information and statistical data on oil and gas in the country; and secondly, serve as a catalyst to set up projects to expand education and skills training programmes that meet the demands of the industry. Initially, the oil and gas companies (Peek, 2008: 78) should have the mandate of facilitating this institution to focus on the skills gap and later on addressing other challenges by facilitating a joint response.

Thus, as indicated earlier, in 1982, the Angolan government adopted a decree 20/82 on the mandatory of hiring and training Angolans by foreign companies operating in the oil and gas industry. It was recommended that oil companies could not hire foreigners unless qualified Angolan workers are not available in sufficient numbers and that skills training programmes shall be provided in a way that progressively the rule of proper employment of national workers supposed to be applied at all hierarchical levels (Peek, 2008: 73).

4.4.4 Role played by oil and gas companies in reducing skills shortages in the Angolan oil and gas industry

According to Cokin (2017: 11), the Angolan national oil company has played various roles in Angola's political economy and is one of the country's most important commercial actors that encompass almost every sector of Angola's economy. Therefore, in terms of tackling issues/crises related to petroleum industry performance and development, oil and gas companies in sub-Saharan Africa as well as in Angola, were linked up with local university and training institutions to develop skills programmes, specifically designed to meet the skills requirements of the industry (Peek, 2008: 53). The important objective of local oil and gas companies was of developing local capacity to educate and train the workforce. Unfortunately, it was acknowledged that a few major oil and gas companies have taken such initiatives, but the experience has been promising so far.

Therefore, in the process of tackling the skills shortages in the Angolan oil and gas industry, it was recommended that more companies should engage in practicing capacity development programmes, and then, an alternative modality to be adopted was in-house skills training programmes by the oil and gas companies. Another approach adopted was to outsource skills training programmes of Angolan professionals to the growing number of training institutions around the world. Lastly, the opportunity was also given to local oil and gas companies to develop and provide skills training programmes within the framework of local content requirements. In addition, partnerships intended to be developed with local service companies to provide targeted education and skills training programmes (Peek, 2008: 53).

4.4.5 Measures applied to reduce skills shortages in the Angolan oil and gas industry

It was stated earlier that two-pronged strategies were applied to reduce the skills shortages in the Angolan oil and gas industry as well as to different oil and gas industry in the sub-Saharan region. According to Peek (2008: 75-76), the first strategy involved the necessity of a progressive effort to increase the awareness in promoting and improving education and skills training programmes by the main stakeholders (the oil and gas companies, the national government, and the international community, including donors). The second strategy consisted of keeping a closer collaboration and coordination amongst the oil and gas companies. Therefore, according to Peek (2008: 76), better results were expected when companies could act jointly, rather than going at it alone.

However, it was indicated that oil and gas industry companies have tried to develop skills training programmes, but it was also recognised that the scale of these skills programmes was rather small, and more efforts were needed to make a difference (Peek, 2008: 76). Other measures included several modalities, which were developed and served as a model to reduce skills shortages. Therefore, Peek (2008: 76) indicated that oil and gas companies could link up with local university and skills training institutions to develop programmes specifically designed to meet the skills requirements of the petroleum industry. The emphasis was on developing local capacity to educate and train local workers. Unfortunately, Peek (2008: 76) stated that a few major oil and gas companies have taken such initiatives.

The additional measure used to reduce the skills gape in the Angolan petroleum industry was the in-house skills training programmes by the oil and gas companies. Therefore, companies have expanded their in-house skills training programmes; sometimes in the African region, they have been sending their professionals to receive training in the high-income countries. Lastly, oil and gas companies were mandated also to provide skills training programmes within the framework of local content requirements. Therefore, partnerships were suggested as one of the means in the process of providing targeted education and training programmes in association with local service companies. The government also has had a role to play in supporting local talent capacity development within the oil and gas industry (Peek, 2008: 76).

4.4.6 Socio-economic influences of fulfilling local content requirements through skills training programmes

According to Corkin (2017: 9), the expectation in introducing a certain amount of flexibility in the legal framework was that the Angolan petroleum industry could be developed to stimulate oil and gas production and government revenue. However, there were various challenges in terms of policy uncertainty and lack of harmony between government Departments regarding the management of the oil activities. However, the advantage of having support from the government and oil and gas companies in managing appropriately the oil and gas industry can help create awareness of human capacity development and reduce the skills gap, which can allow creating new opportunities, to set priorities and strengthen the education and training system within the petroleum industry.

In addition, in Angola, the key challenge was also to design skills programmes that could be responsive to the labour market and that was about to focus on scarce skills (Peek, 2008: 76). However, more opportunities in reforming regulations governing the petroleum industry included aspects such as employees' business sustainability and working with local subcontractors, unions, and community stakeholders. An additional advantage is that most technical training in the petroleum industry and other engineering disciplines could be provided often at a much lower overall cost in the country with local knowledge that remain of crucial importance when developing capacities (Peek, 2008: 71). Yet, technical skills development in Africa as well as in Angola will remain a key sector for donors' support in attempting to reduce the skills

shortages. Still, there should be growing awareness in terms of providing orientation towards the world of work and an increasing emphasis on the need for employable skills.

4.4.7 Lesson learned from fulfilling local content requirements through skills training programmes

According to Peek (2008: 74), skills training programmes can play a useful and impactful role in creating a large pool of skilled workers and in capturing the labour market. Therefore, fulfilling local content requirements through skills training programmes could support the process of reducing the skills gap within the oil and gas industry or any other socio-economic sector. However, observations indicated that some of the sub-Saharan African countries have encountered challenges in the process of fulfilling local content requirements. In Angola, Peek (2008: 75) stated that a study by the World Bank found that many companies operating in Angola have already achieved compliance with the unskilled worker targets, but that they were having difficulty in complying with the targets for higher-level staff.

In contrast, from different other world regions, oil and gas companies have seen some degree of success in meeting local content requirements. The recommendations and follow-up actions were the suggestions formulated by all appointed experts of capacity development interventions for the continuous sustainability and improvement of staff capacities, including all activities related to oil and gas industry performance and development in Angola.

4.5 Capacity development interventions in the Nigerian petroleum industry

The aforementioned case studies discussed the causes of skills shortages, the impacts of skills shortages and the measures that were taken into consideration to narrow the gap. In addition, reasons for the scarcity of locally trained personnel, and how the shortage affected the capacity of oil and gas industry to meet local content requirements were emphasised. In Nigeria, the process of capacity development interventions in the oil and gas sector has required efforts and awareness to change and improve the government policy for oil and gas sector development, legal framework improvement, change from relevant government institutions and change from the operations of each of the main oil and gas companies (Peek, 2008: 6-7).

Additionally, the necessity for capacity development programmes was to address the issue of local skills shortages, skills training facilities and the measures to be taken in addressing the skills gap. According to Ozigbo (2008: 51), local content in the Nigerian petroleum industry was still very slow as over 60 percent of the work value in the oil and gas industry was carried out of the country. Consequently, the lack of local content capacity development has led to a dearth in jobs, skills development, and lack of sustained national socio-economic development.

Therefore, with the awareness and awaking of local consciousness, the Nigerian National Petroleum Corporation (NNPC) has put in place a comprehensive Nigerian content development strategy as the locomotive for actualising economic derivatives from the oil and gas industry (Ozigbo, 2008: 51). Furthermore, the main objective of the Nigerian content policy was to promote a framework that guarantees the active participation of Nigerians in oil and gas activities without compromising standards to stimulate the growth of local content capacity.

4.5.1 Examination of the main causes of growing skills shortages in the Nigerian oil and gas industry

According to Ozigbo (2008: 51), in the Nigerian oil and gas industry, it was noted that there was a lack of motivation and a knowledgeable workforce and a lack of human resource development or lack of capacity development to form the major board of the oil and gas industry. Additionally, it was noted that the Nigerian oil and gas industry lacked endeavours/efforts to deploy state of the art information and communication technology facilities to service its operations thereby increasing productivity and profitability. Therefore, capacity development programmes and collaborating with local and international institutions were suggested as important tools in the process of oil and gas industry development, especially where the required capital and local content technical capacities were relatively in short supply.

According to Peek (2008: 26-27), similarly to the global causes of skills shortages, various other sources were identified as causes of the growing skills shortages in the Nigerian oil and gas industry. Mostly, the lack of training facilities, lack of vocational and technical training, school accreditation was not provided, an ever-increasing demand for higher-skilled workers were identified as general causes of the growing skills shortages in the Nigerian oil and gas industry (Peek, 2008: 63-71).

It was also indicated that discussion in the public media gave the impression that the growth in energy demand, in large part from China and India, were the main drivers of the existing skills shortages gap. In addition, the other main reason was, in fact, the skewed demographic profile of the professionals in the industry with many retiring in the next few years. According to Peek (2008: 10), the petroleum industry in Nigeria and other Africa countries is undergoing dramatic change. New competitors emerged with many new start-up companies on the horizon and global demand for energy, environmental concerns have been raised and, last but not least, the industry continued increasingly facing shortages of skilled personnel.

Whether in the past or currently, rising skills shortages has become one of the main problems facing the oil industry throughout the world, particularly the African continent. Therefore, Peek (2008: 8) indicated that three reasons were generally identified as the main causes of the skills shortages in Nigeria and the African oil and gas industry, including:

- A very significant increase in the demand for energy and the resulting hike in the price of oil;
- An average age of professionals in the oil industry was one of the highest of any industry, with many people retiring in the next few years; and
- Skills training in Petro-technical programmes have been on the decline for many years.

Therefore, there was a growing awareness to admit that this problem was not a temporary bottleneck but something more serious which cannot be sorted out in just a couple of years. Strategies and new initiatives were required to provide long-term solutions (Peek, 2008: 11). However, in Nigeria, the issue of skills shortages needed to address the root causes and the best-suited measures to deal with the skills crisis. Furthermore, Peek (2008: 27) disclosed that skills shortages were more the result of inadequate supply of qualified skilled workers (training, rather than increased demand for skills: It was quality more than quantity). Specifically, fewer qualified engineers, high requirements for scarce technical and commercial skills, and unattractiveness of

the industry, demographic changes and increased energy demand were considered as main causes of skills shortages in the oil and gas industry (Peek, 2008: 27).

4.5.2 Examination of how costly was the skills gap in the Nigerian oil and gas industry and the measures that contributed to close the skills gap

According to Peek (2008: 28), skills shortages were already costly constraining or limiting the oil and gas industry development. The most direct and immediate cost was of hiring and replacement, as well as the increased salaries required to attract adequate and qualify staff. Thus, the understanding of the estimated cost of skills gaps whether in the Nigerian oil and gas industry or any other country illuminated a clear picture of the estimated sum of money that a petroleum industry can be lost by lacking the required skills or by continually experiencing the crisis of skills shortages. Therefore, according to Peek (2008: 30), some measures were best suited to deal with the skills shortages. However, there was not one single measure to close the skills gap or any specific recommendation that could be sufficient to reduce the crisis to a manageable problem.

Consequently, Peek (2008: 30) suggested the following measures to tackling skills shortages:

- **Making the workforce a strategic boardroom issue:**

In many cases, the oil and gas sector worldwide are very capital-intensive, and the attention of company boards and top management is much focused on investments, returns or on the economic outcome than other different aspects related to social development (Peek, 2008: 30). Therefore, whether in the Nigerian oil and gas industry or any other country's petroleum industry, human capacity development and planning have never been a central matter to be handled by the highest level of decision-makers in the oil and gas industry. Human capacity development and planning has been often considered as a matter of secondary importance, which was dealt with by management at lower levels. Furthermore, human capacity development and planning have been playing a relatively minor role in the overall operations of the oil and gas industry because it was assumed that it is less complex to secure the staff requirement. As it was shown earlier in the aforementioned sections, the growing scarcity of qualified staff has had major and very costly repercussions impacts on the

oil and gas industry. Therefore, it was indispensable for human capacity development and planning to become an integrated part of strategic planning in the petroleum industry. Peek (2008: 30) suggested that the boardroom was accountable of putting in place or implementing significant strategies to tackle skills shortages and not to delegate responsibility to lower-level management. These strategies made it increasingly clear that the oil and gas industry was required to implement them to promote human capacity development and planning and to upgrade human resource planning and capacity development programmes in the corporate structure. Thus, having human capacity development programmes and planning in place as an integral part of the oil and gas industry long-term strategic planning can likely ensure a strong structure that can preventively empower the workforce with necessary skills programmes and move the oil and gas industry in a performance and growth direction.

- **More skills training programmes (courses)**

There has been an increasing awareness in the global oil and gas industry of the need to provide skills training programmes and improve human resource capacity. According to Peek (2008: 31), in the past three decades, there were not enough educational institutions responsible to make available education and training programmes that were required in the oil and gas industry. Therefore, stakeholders to suggest capacity development interventions and to create skills training programmes susceptible to empower the workforce at the workplace, in the petroleum sector, undertook initiatives. In Nigeria, although the practice of capacity development interventions was seen as one of the best solutions to reduce skills shortages in the petroleum industry, going that way did not eliminate a number of challenges, because of the lack of available funding and poor infrastructure.

However, the essential argument was that the skills crisis was too important to ignore the necessity or possibilities of offering skills training programmes in countries with huge populations of young people willing/motivated to have access to skills training programmes and jobs. Moreover, skills training programmes was measured as an effective means of tackling the skills shortages whether in the petroleum industry or in different other socio-economic sectors (Peek, 2008: 33). Additionally, it was also indicated that increasing the number of students in the oil and gas field could be an effective measure.

According to Peek (2008: 33), discussions about finding the effective measure was reasonably important, that company were having the view of raising the quality of education than raising the number of students. In light of the aforementioned, this was consistent that technical education often to be too theoretical and less geared towards developing practical skills, through capacity development programmes interventions. In addition, it was stated that the skills shortages can be countered by improving skills training programmes interventions within oil and gas companies and keep older workers beyond their retirement period (Peek, 2008: 32-33). However, according to Peek (2008: 33), studies on low-income countries such as Nigeria concerning skills development in the oil and gas industry indicated that skills training programmes in low-income countries remain one of the most fundamental components of an effective strategy to reduce the skills gap.

Nevertheless, it was also highlighted that such action could pose big challenges. Therefore, Peek (2008: 33) highlighted that amongst the challenges that were identified as barriers to skills development in the Nigerian oil and gas industry, the lack of adequate infrastructure, scarce teaching personnel and little funding were revealed as all-important obstacles that needed to be overcome. Thus, in the process of overcoming the challenges of reducing skills shortages, several initiatives have been developed to establish new centres of teaching in low-income countries, often in close collaboration with universities or training institutions of high-income countries (Peek, 2008: 33-34). However, different skills training programmes models have been recommended to the Nigerian oil and gas industry as well as to other low-income countries, each with different implications in terms of cost and the level of coordination.

Therefore, three models of capacity development interventions were suggested in terms of providing skills training programmes to low-income countries. According to Peek (2008: 34), there was the so-called “off-shore campus model” where a university based in an OECD country would have to collaborate with a national oil and gas company, or government in a non-OECD country to set up a local campus specialising in Petro-technical education. A second model was an offshore programme, which involved direct collaboration between a university-based in an OECD country and a university in a non-OECD country. This involved either the award of a degree recognised by either institution, or the oversight of a local programme by the OECD-based University. Lastly, the third model was best characterised as a visiting academic

programme. This was considered as the simplest model with a local university engaging a visiting academic to lecture at the host institution. Thus, the measure of capacity development interventions (more skills training programmes in the oil and gas industry) has appeared to be a more useful and successful model/measure to tackling and reducing the skills gap in the oil and gas industry. According to Peek (2008: 45-46), many other models were used as measures to counter the skills gap in low-income countries, including in Nigeria. These measures included the improvement of skills training programmes, improvement of human resource capacity development within companies, keep employing the older workforce longer in their jobs, training more women in technical professions, and services provided by private employment agencies.

Further views from oil and gas companies around the world on the effectiveness of measures to counter skills shortages have involved external recruitment from competitors and other industries, internal cross-skilling, leadership programmes, greater use of remoter and virtual working places to increase the use of technology and external recruitment from suppliers and customers (Peek, 2008: 44). In light of the aforementioned, a real concern was to identify effective measures/strategies that could counter the growing scarcity of qualified specialist workers. It was, therefore, suggested that skills shortages cannot be eliminated with a single model, but a multipronged strategy can be used in response to reducing skills shortages in the Nigerian oil and gas industry and other low-income countries (Peek, 2008: 44).

4.5.3 Examination of the process of technological capacity development in the Nigerian petroleum industry

According to Vallejo (2015: 2), the common goal of development projects through the years has been poverty alleviation and livelihood improvement for local people. Therefore, technological capacity development refers to a growing process through which capacity development has improved its kind of interventions in different yearly periods. However, Vallejo (2015: 2) indicated that in the 1950s and 1960s, capacity development interventions targeted institutional capacity building through technical assistance, which aimed at providing local public institutions with physical infrastructures and finances required to manage programmes of public investment. In the 1960s and 1970s, the focus of capacity development interventions shifted to

institutional development and strengthening. In the 1970s and 1980s, the focus of development shifted toward the people, stressing the importance of intangible aspects, such as education, health, and population through the development of human resources including attitude, skills, knowledge and a wide diffusion of information and communication technologies, which brought the importance of knowledge for development to the forefront. In the 1980s and 1990s, the focus of the development was on economic behaviour and sustainability. Institutional economists, therefore, resurged with an emphasis on the major stakeholders including government, non-governmental organisation (NGOs), and private organisations, as well as their networks and external environment.

The UNEP (2017: 13) indicated that key areas in the process of technological capacity development should include development of infrastructure and upgrade facilities; identifying opportunities for local suppliers; local business and supplier's enhancement; development of specialised skills in the oil and gas sector; and skills acquisition programmes. However, local content capacity development talks about the quantum of composite value added or created in the economy through the utilisation of human and material resources for the provision of goods and services to the petroleum industry within acceptable quality of health, safety, and environmental standards to stimulate the development of indigenous capacities (Ozogbo, 2008: 59).

In any organisation, local content capacity development can be also understood as a valuable significant input created and added to the organisation in terms of improving performance and developing capacities through the employment of human and material resources to promote productivity, innovation, creativity and even to expand or magnify organisational reputation from the external environment. Capacity development interventions can, therefore, help in discovering new techniques and technologies within an organisation. Hence, the UNEP (2017: 9) emphasised that new techniques and technologies discovered through research and development are vital in enabling the oil and gas industry to meet the national energy demand and are vital to overcome current and future challenges.

However, in Nigeria, Ozigbo (2008: 59) highlighted that the vision for local content capacity development was to transform the oil and gas industry into the economic locomotive for job creation and national socio-economic transformation by developing

in the country capacity and indigenous capabilities. Yet, the expectation from that idea (vision for local content capacity development) was to generate a greater proportion of work, which should be done in the country with active participation of all sectors in the socio-economic transformation process. Thus, one of the petroleum industry's main objectives was to fulfil local content technological capacity development strategic vision of developing in-country the workforce capacity, which might enable them to design and develop plants and facilities for the national oil and gas industry and other related/dependent industries development. Therefore, according to Ozigbo (2008: 58), the local content development in the Nigerian petroleum industry was an initiative on the part of the Nigerian government to develop local capacity in the oil and gas industry to enable Nigerians to participate actively in oil and gas education programmes.

In other words, the initiative consisted of improving and promoting the utilisation of the Nigerian human and material resources in the exploitation and exploration of Nigerian hydrocarbon resources. The technological capacity development was envisaged to improve and increase local content capacity in ensuring that the quantum or percentage of locally produced materials, personnel, goods and services rendered to the industry are increased thereby generating more employment and socio-economic empowerment (Ozigbo, 2008: 58).

4.5.4 Socio-economic influences of fulfilling local content requirements through skills training programmes in Nigeria

According to Ozigbo (2008: 56), the oil and gas industry in Nigeria is of strategic importance that it was essential to develop a highly skilled workforce for the petroleum industry performance. Therefore, the Petroleum Technological Development Fund (PTDF) was established by the Decree Number 25 of 1973 and later amended as the PTDF act of 1990 with the purpose of developing the workforce capacity in the country to operatively participate in the development and exploitation of the mineral resources available in the country (Ozigbo, 2008: 56). However, the mandate of the PTDF Centre was of equipping Nigerians with technological and managerial knowledge and expertise to compete effectively in the oil and gas sector as well as providing technical skills to the workforce that are so crucial to the success of national petroleum industry policy. According to Ozigbo (2008: 56), the socio-economic activities under execution included:

- Financing of research development and endowment in institutions,
- Development of specialised skills in the petroleum industry,
- Upgrading of the Petroleum Training Institutions (PTI) into a centre of excellence for manpower capacity development in the petroleum industry,
- Accelerate human capital capacity development as in train the trainer programmes,
- Skill acquisition programmes, and
- The petroleum industry expansion has contributed to economic growth, which also resulted from the economic reforms and macro-economic stability. This has generated more employment and economic empowerment of the country.

Additionally, the PTDF Fund was established as an agency of the government-mandated with capacity development and technology transfer/acquisition in the Nigerian oil and gas industry. According to Ozigbo (2008: 56 - 57), the vision of the PTDF was to serve as a vessel for the development of the indigenous workforce and technology transfer/acquisition in the petroleum industry. The mission of the PTDF was to train Nigerians to qualify as graduates, professionals, technicians, and artisans in the fields of engineering, geology, science, and management in the petroleum industry. Furthermore, it was indicated that there was a real contribution to capacity development programmes in terms of improving indigenous capacities in the Nigerian oil and gas industry. According to Ozigbo (2008: 56 – 57), several investments in the petroleum industry and other sectors of the Nigerian economy have improved macro-economic stability, which has instilled greater credibility in the Nigerian economy.

On the contrary, Nigerian oil and gas wealth has not been converted into meaningful socio-economic development due largely to poor leadership and corruption. The increase of huge oil and gas revenues, unfortunately, was challenged by a weak political and administrative structure, which gave rise to a high incidence of corruption. Additionally, other problems were related to the lack of accountability and weak

linkages between government and communities, which in turn led to weakness in socio-economic transformation processes with rural and urban poverty and collapse of infrastructure, including health and education, which are vital institutions to sustainable growth and development of the country (Ozigbo, 2008: 57). Nevertheless, socio-economically, the aspiration for establishing the Petroleum Technology Development Fund Centre contributed to increasing the petroleum industry productivity, facilitating local content participation in the oil and gas industry by fast-tracking technology transfer and harnessing linkages with other sectors of the economy. Yet, according to the UNEP (2017: 7), aspiration today may also include:

- Supporting and managing oil and gas sector development following the universal standards and best practices for oil and gas sector development;
- The promotion of transparency and accountability to the public in the management of the oil and gas sector in the country;
- Encouraging organisations (private sector) and public sector to address good governance, gender perspectives and human rights in resource management while promoting best practices in fighting corruption and inequity in the oil and gas sector;
- Promoting the understanding of the oil and gas value chain and opportunities for employing locals in exploration and processing activities;
- The integration of risk and vulnerability assessment, climate change adaptation, environmental, social, and other cross-cutting issues into oil and gas development; and
- Establishing and strengthening capacity development programmes in legal and regulatory framework within the organisation; including enhancing standards, guidelines and best practices of existing policy, legal and institutional framework in the country.

Moreover, Ozigbo (2008: 60) indicated that other socio-economic aspirations for the petroleum industry development in Nigeria included:

- The continuous institutional capacity development in the petroleum industry, especially in the upstream sub-sector,
- Sustaining domestic self-sufficiency in the supply and distribution of petroleum products and derivatives through a market-orientated downstream sector,
- Transiting from an oil-dependent mono-cultural economy to an industrial poly-cultural economy using the structures in the industry as the basis for industrial take-off.

Accordingly, for sustainable socio-economic development, it was suggested that there should be deliberate collective efforts directed towards capacity development programmes in the oil and gas industry. Therefore, the collective efforts should involve the role of government in promoting and sustaining policy on technological capacity development efforts. Thus, in light of the aforementioned, the ability in achieving the goal of technological capacity development depended on the Nigerian government to institutionalise and coordinate technical capacity development as an important social process that can be sustained to produce the desired outcome.

4.5.5 Lesson learned from fulfilling local content requirements in the Nigerian oil and gas industry

According to Ozigbo (2008: 51), it was recorded that the rapid economic development in Nigeria has been largely subject to the deliberate policy of the government on technological capacity development through investment opportunities that exist in the oil and gas industry, in human capital and institutional development. In Nigeria, a seminar on local content policy stated that participants were blaming the slow pace of implementing the Nigerian content policy in the oil and gas sector on the absence of legislation. Capacity development interventions allowed several systematic and deliberate policies toward the structuring/building a network of institutions for the promotion of technological capacity.

According to Ozigbo (2008: 52), institutional capacity development and co-ordination have remained as part of the strategies adopted by the Nigerian government for tackling the issues of technological backwardness. According to Peek (2008: 74), the policy was introduced several years ago, but the government has yet to come up with the implementing legislation that would provide a legal basis for the policy. However, despite the slow pace of implementing the Nigerian local content policy, participants acknowledged that the local content initiatives in Nigeria have led to an increase in the number of contracts awarded to indigenous oil companies by international oil companies.

On the other hand, Peek (2008: 74) specified that in Nigeria, most projects have failed to meet provisions for the use of national staff in top-level positions, and they have pointed out that local capacity has remained constrained by a lack of experienced personnel with adequate technical competency to carry out complex and highly technical assignments. Thus, it was recommended that there should be a development of the Petroleum Technology Development Funds (PTDF) to sustain partnerships and alliances/collaborations to areas of low-level indigenous competencies and skills (Ozigbo, 2018: 51). In addition, it was suggested that the PTDF should serve as a locomotive for the development of indigenous manpower and technology transfer/acquisition in the petroleum industry.

4.6 Various other experiences and lessons of capacity development interventions from other world regions

Oil and gas companies in various other countries seemed also to come across difficulties in complying with local content requirements. Therefore, as an illustration, Ozigbo (2008: 52) stated that technological development in Southeast Asia was facilitated by several systematic and deliberate policies directed for the structuring and development of various institutions. But the aforementioned illustration does not mean that African countries should follow the same development path to technological capacity development like in Southeast Asia, which is not wrong, but the essential lesson is that Asian experience has confirmed the overall opinion that human and institutional capacity development are critical to technological development and socio-economic transformation.

Furthermore, it was shown that the Malaysian experience with local content requirements has also been described as successful, as well as that of Russia in the Sakhalin region (Peek, 2008: 75). According to Jeff (2007), in the Middle East region, Iraq's oil sector was in the restructuring process. Capacity development interventions for the restructuring of the oil sector in Iraq were required to address and solve key problems related to fuel subsidies, corruption, Federal vs Local authority, oil investment contracting terms, security, personal capacity development, transparency, and governance. However, one of the most essential outcomes for using capacity development programmes in restructuring Iraq's oil sector was the redistribution of oil revenues collected by the Federal government to regions based on population. Furthermore, from the South American region, there is an impression that oil and gas companies have achieved some degree of success in meeting local content requirements.

For example, in Brazil, there was a development of a good model of the degree of success in meeting local content requirements. According to Peek (2008: 75), the Brazilian legislation on local content aimed to protect companies from foreign competition while they were developing the skills and capabilities of local workers. However, it was highlighted that in Brazil the lack of competition has led to higher costs and delayed technological development, but it ensured that the benefits from the petroleum sector were internalised (Peek, 2008: 75). In addition, Peek (2008: 75) argued that by increasing indigenous technical skills and promoting job creation, the Brazilian local content programmes have worked. In the African region, and particularly in South Africa, this study intends to identify and analyse some critical constraints to capacity development programmes and to the process of closing the gap of skills shortages in the petroleum industry.

Thus, the experience/lessons from other world regions may possibly inspire African countries, including South Africa on how skills shortages problems were successfully tackled through capacity development interventions. According to Ozigbo (2008: 53), current developments in science and technology have been recognising as vital condition for economic growth and social transformation. Therefore, it is indicated that in the African continent, science and technology indicators show lower values than in other world regions and that capacity development is critical to industrial development

and socio-economic transformation (Ozigbo, 2008: 53). However, there has been a growing awareness that organisations and countries, which can develop human skills, are also able to increase the productivity of workers in the knowledge from which organisations might contribute to socio-economic wealth. Because of this evident, structural, and dynamic relationship between capacity development interventions or organisational system of education (skills training programmes) have a direct and critical bearing/impact on the types of the workforce potentially available for the management of oil and gas industry. Therefore, education in the oil and gas industry, in the African context is crucial to promote local workforce capacities. However, according to Peek (2008: 54 - 55), in Equatorial Guinea, the law on employment prioritised the domestic workforce and it stipulated that in all companies, not only the oil and gas industry, at least 65 percent of professionals must be Equatorial Guinea nationals, with an even higher percentage for non-professionals.

Furthermore, Peek (2008: 74 - 75) indicated that a survey by the African Development Bank revealed that many companies in Equatorial Guinea were complaining that it was difficult to comply with this quota due to the lack of available skills. Although the law on employment prioritised the domestic workforce, as a result, many foreign workers were hired, and migration policy became a key instrument for reducing the gap between supply and demand. Unfortunately, failure or lack of sustainable capacity development best practice in the country was indicated as a persistent issue/obstacle to human resources skills development and sustainable petroleum industry development. Furthermore, in the case of Angola, Peek (2008: 75) stated that a study by the World Bank founded that many companies operating in Angola had already achieved compliance with the unskilled worker targets, but that they were having difficulty in complying with the targets for higher-level staff.

Finally, in light of the aforementioned, Ozigbo (2008: 53), confirmed that capacity development in a broad context implies a dynamic process which enables individuals and organisations to develop critical social/technical capacities/capabilities to identify and analyse problems and provide solutions. Therefore, a flexible and guiding policy environment is a sine qua none key line of attack for capacity development programmes process within an organisation to thrive without hindrance. Thus, the policy environment for capacity development interventions should be multi-sectorial

involving stakeholders such as government, oil and gas industry, research centres and universities. According to Vallejo (2015: 3), four approaches have been used to implement capacity development interventions in different countries worldwide. The organisational approach focused on identifying the components of capacity within an organisation. Organisational change was targeted, but Vallejo (2015: 3) indicated that it was not clear how to change organisations in the developing world. Organisational change is necessary but not sufficient on its own or out capacity development interventions. The institutional approach focused on building the capacity to create, change, enforce, and learn from the processes and rules that govern society. In addition, it focused on strengthening and restructuring existing local institutions, and that the emphasis was on individual institutions.

At the macro-level, this approach allowed dealing with norms, cultural values, incentive systems, and beliefs, which underlie development problems. However, the boundary between institutional change and capacity development was unclear (Vallejo, 2015: 3). The systems approach is a dynamic, multidimensional, holistic, and interrelated approach that covers the institutional and organisational perspectives. This approach suggests that capacity development should build on existing capacities, rather build a new system. It is a comprehensive and flexible approach, which emphasis linkages between elements. Nevertheless, the biggest difficulty of this approach is to identify what is and what is not a capacity development activity, and that this approach is unclear where a system change effort starts (Vallejo, 2015: 3).

Finally, the participatory approach is a process that emphasises the relevance of the means used to achieve capacity development. It empowers partnership and ownership as key elements for capacity development. The participatory approach has a clearly defined scope and shares concepts of development, emphasising participation, ownership, and power-sharing. However, interventions with a narrow development outcome are easily confused as capacity development. Nevertheless, interventions that do not contribute to developing capacity should not be considered capacity development (Vallejo, 2015: 3).

4.7 Conclusion

Socio-economic transformation in any country, including South Africa requires sustainable governance of economic sectors such as petroleum resources with integrated development planning, clear development strategies, and policies backed by responsible actions. Currently, the link between developing local technological capacity and the ability to respond to challenges are usually brought about in the process of learning and co-operation between organisations and/or institutions. Among the most important challenges to capacity development in the oil and gas industry, there is a lack of more awareness and efforts from institutional and/or organisational co-operation and effective co-ordination in terms of how to overcome the issue of skills shortages. In the absence of co-operation and co-ordination amongst the community of actors and the necessary organisational/institutional framework for coordinating capacity development activities, it may be impossible for the petroleum industry to develop the desired skills.

In addition, it may be impossible to close the skills gap and develop the technological capacity that the organisation and the country would like to have for socio-economic transformation and the global competition in the absence of co-operation and co-ordination. Skills development of employees in the oil and gas industry as well as in different other sectors of the economy remain a vital requirement for organisational performance and development, and socio-economic transformation in the country. However, skills shortages keep on being an important challenge amongst various others that obstruct organisational creativity, innovation, productivity, performance, and development.

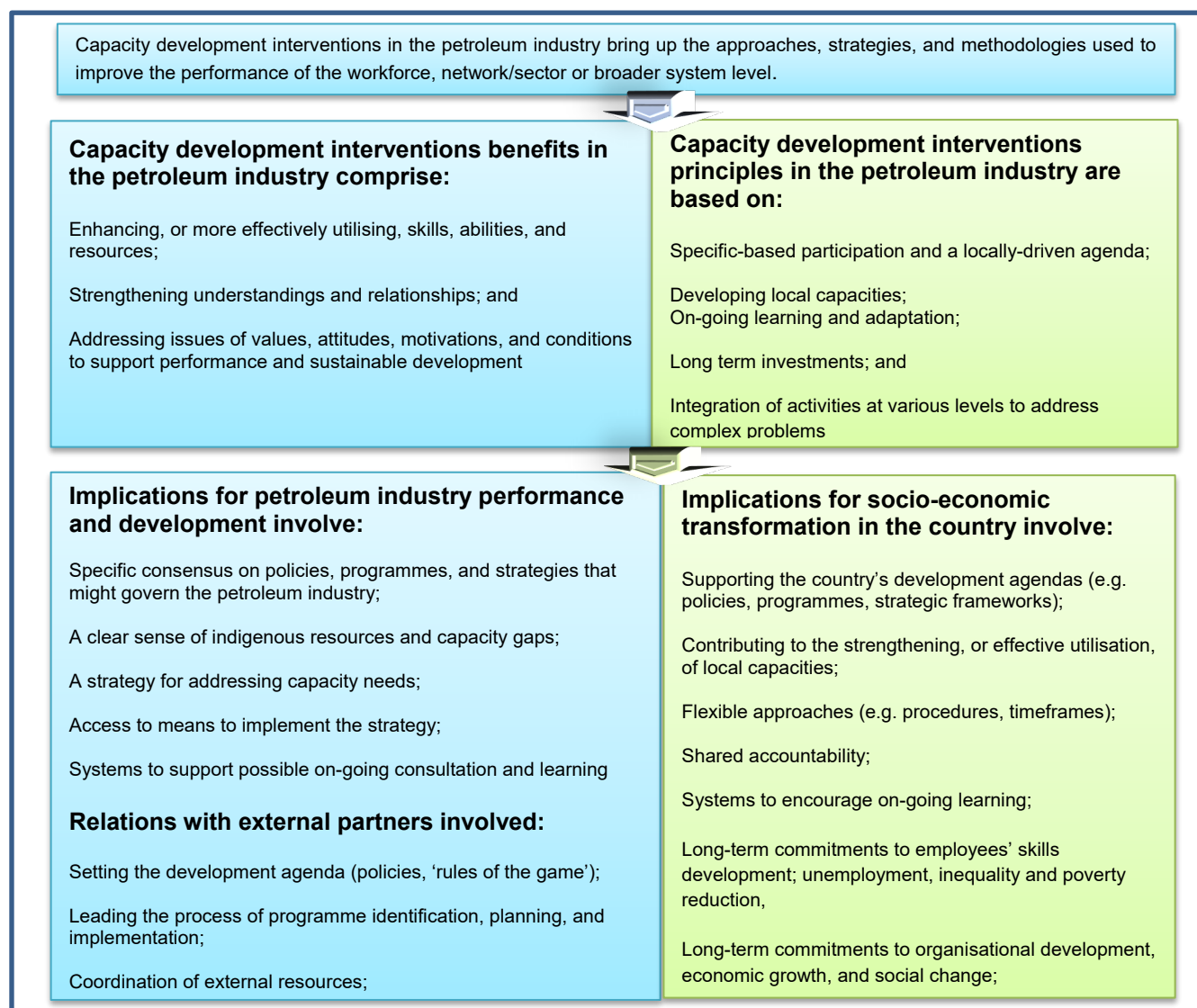
The performance and development oil and gas organisations in Africa, including the South African petroleum industry, have been affected by the lack of awareness and appropriate framework to implement capacity development programmes that promote employees' skills improvement and development. Therefore, capacity development interventions and best practices are suggested as a key approach in solving the question of skills gaps in the petroleum industry. However, the vision, mission, values, policies, objectives, and strategies of any organisation cannot be improved, achieved, and sustained without employees' capacity development. No situation can change in any organisation until there is an apply force that can change it.

In light of the aforementioned, employee skills development is the key force that can change things in the organisation and the country. The skills shortages and socio-economic crises in any organisation/country may not change or be resolved until there is an executive force, approach, technique, or vigorous interventions that can turn a situation into a profitable environment or condition. Capacity development interventions and best practices can, therefore, be that force, approach, or technique, which can be used in tackling organisational skills shortages and socio-economic crises in the country. According to Mpango (2013), socio-economic transformation is a process in which an increasing proportion of economic output and employment are generated by various economic sectors, including the petroleum industry sector.

This process of transformation connotes the shift from traditional ways of doing things to more industrial and/or improved service-based economies with sustained high GDP growth rates. Capacity development interventions can, therefore, be an important tool that can help organisations to contribute effectively to GDP growth, through employees' skills development and productivity in various economic sectors, which may give access to changing life conditions and in turn, reduce unemployment, poverty, and inequality. Bolger (2000: 7), stated that capacity development interventions in the petroleum industry refers to the approaches, strategies, and methodologies used to improve performance at the individual, network/sector, or broader system level, with implications for socio-economic transformation in the country.

Thus, various types of interventions or approaches can be used for organisational change and socio-economic transformation, but capacity development interventions in its different dimensions focusing on human capacity development appear to be an essential locomotive or engine of organisational innovation, competitiveness, productivity, and performance, as well as a locomotive or engine of socio-economic transformation. Figure 4.12 indicates and summarises briefly the potential implications capacity development interventions could have for organisational change and socio-economic transformation.

Figure 4.12 Capacity development intervention benefits in the petroleum industry: In brief



Source: Adapted from Bolger (200: 7)

Figure 4.12 indicates that capacity development interventions in the petroleum industry relate mostly on the improvement, achievement and sustainability of organisational vision, mission, values, policies, objectives, strategies, procedures, rules, and regulations. Organisational improvement can only be possible in considering principles that support the best practice of approaches, strategies, and methodologies, which can contribute to increase the performance at the individual, network/sector, or broader system level of the organisation. Thus, it can be stated that organisational change or development and socio-economic transformation without capacity development interventions can appear to be impossible. However, it is possible that human capacity development can be the power steering of organisational change and

socio-economic transformation in the country. Capacity development interventions experience and institutional/organisational sustainable framework from other world regions can be considered as a reference to develop African capacities. In other words, learning from the economies' success and experience is a very important component of capacity development interventions in any organisation/country. Sustainability in terms of capacity development is critical to the success and effective performance of the petroleum industry. It was indicated earlier that many organisations have failed to achieve their mandate by lacking sustainable human capital capacity development because of capacity development interventions sustainability and/or absenteeism.

Therefore, this chapter focussed on identifying and analysing the determinants of capacity development programmes from other world regions. It examined the role of international partners, local governments and oil and gas companies in line with effective human capital capacity development in the petroleum industry and for socio-economic transformation process in the country. Processes to promote avenues that guarantee active local participation in oil and gas activities without compromising international standards was also examined. The next chapter introduces and describes the research methodology/approach and strategies utilised in this study, the mode of data collection, sampling techniques, mode of research analysis, statistical measures applied, validity and reliability of the analysis utilised and finally, the ethical considerations of this study.

CHAPTER 5

RESEARCH METHODOLOGY

5.1 Introduction

The preceding chapters aligned to the review of pertinent literature assisted as a foundation in the process of developing the research method applied in this study. The literature review has clarified the researcher's understanding about factors facilitating and promoting capacity development programmes in the workplace (South African petroleum industry). These include aspects such as elements of the PESTIE factors; the requirements for functional, technical, and behavioural capacity development in the petroleum industry, as well as dimensions of positive human capital capacity development, which are indispensable components that may contribute to closing the gap of technical skills shortages and promoting the socio-economic transformation process in the country. This chapter discusses the methodological approach implemented in the course of this study.

It argues for the research process, the case study method, research design and triangulation method and provides motives for mixing quantitative and qualitative approaches. The current chapter also explains the aim of the combination of both approaches in terms of the process applied for quantitative and qualitative data analyses. The instruments applied to collect data; data collection methods and the computation method used for data analysis are also examined in this chapter. Furthermore, the steps to ensure the authenticity of the study, such as determining its reliability and validity, are specified in the course of this discussion. This chapter concludes with a clarification of the ethical considerations of the research, which involved obtaining the informed consent of participants; ensuring confidentiality and anonymity; and concerns about the accessibility of the research findings. The table of contents makes available in detail several other main and sub-components/sections related to this chapter.

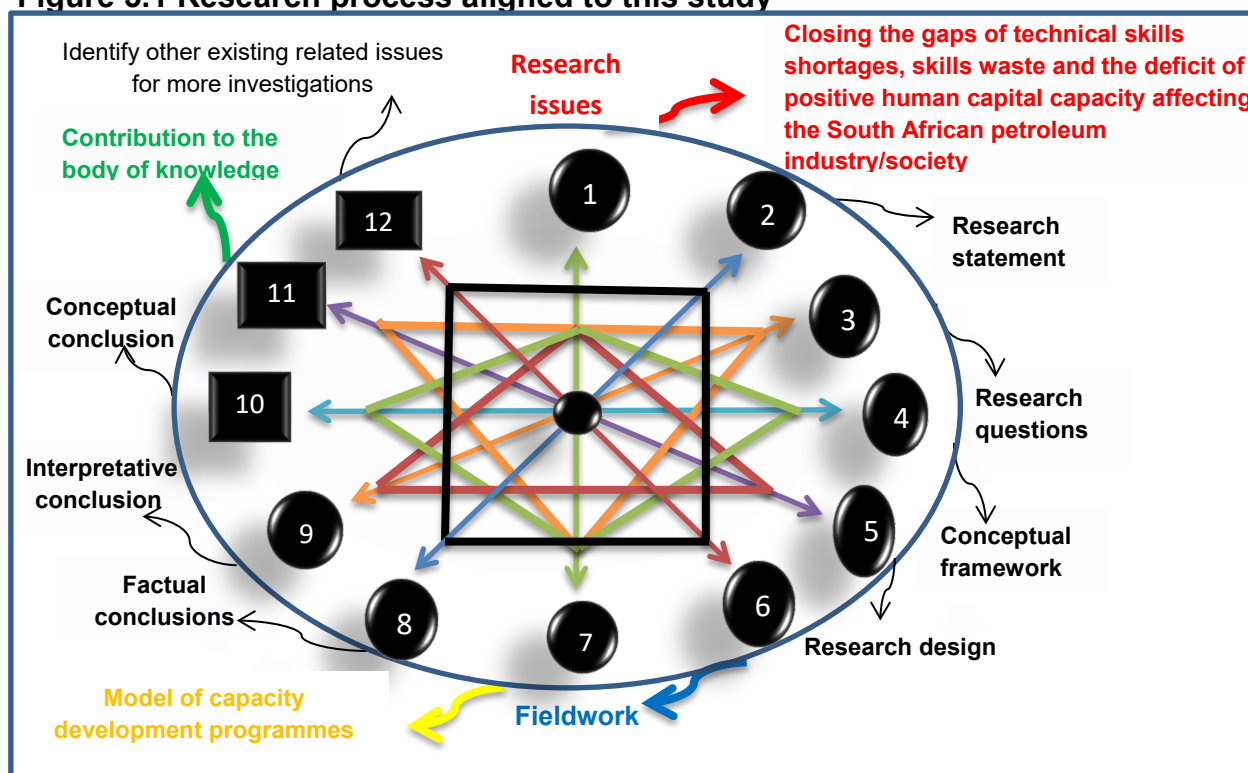
5.2 Research process

Kumar (2014: 28) indicated that research is a process involving the collection of data, as well as the analysis and interpretation of information to answer questions. This implies that the research process must fulfil certain characteristics linked as far as possible to a control and rigorous system, namely: it must be systematic, valid, and verifiable, empirical, and critical. In this study, the researcher implemented the process, steps and techniques that are indicated in Figure 5.1 below, which facilitated the collection and analysis of data procedures. Leedy (2010: 2) denoted that the process of collecting, analysing, and interpreting information enables the researcher to understand a phenomenon of interest or concern.

Therefore, the data collection and analysis process can be understood as formal research in which the researcher intentionally sets out to enhance the understanding of a phenomenon and to communicate the results thereof to the larger scientific community (Leedy, 2010: 2). This formal research process is called research methodology. However, Rajasekar (2013: 5) defined research methodology as a systematic manner of tackling a problem, as well as the art of studying how investigations should be conducted, which entails the processes the investigator uses in describing, explaining, and forecasting phenomenon.

Furthermore, Rajasekar (2013: 5) declared that the research methodology provides the guide and specific work plan for a study with the intent of acquiring some information. Accordingly, Figure 5.1 illustrates the process followed by the researcher in tackling the issue of technical skills shortages affecting the South African petroleum industry and the way of finding/gathering information aligned to the aim and objectives defined for this study.

Figure 5.1 Research process aligned to this study



Source: Self-generated by the researcher

Figure 5.1 displays the process/framework implemented in conducting and completing this study. This process was useful in identifying the gaps or factors causing technical skills shortages, skills waste and the deficit of positive human capital capacity affecting the South African petroleum industry. Furthermore, the process included steps like defining the research statements and research questions; describing the research framework; defining the research design and fieldwork; and suggesting the factual framework, interpretative conclusion, conceptual conclusions, and contribution to the body of knowledge.

The research methodology (triangulation methods) corresponding to the research process applied in this study contributed to identifying the key issues causing skills shortages in the South African petroleum industry and created the opportunity to develop a model of capacity development that can help in solving or closing the gap of skills shortages affecting the petroleum industry and consequently the socio-economic transformation process in the country. Furthermore, the overall purpose of applying the aforementioned research process was to explore the views/opinions of employees regarding human capital capacity development, as well as the sound

effects of technical, functional and behavioural capacity development over employees' productivity and performance in the South African petroleum industry. Therefore, the triangulation approach followed the steps of the research process, which were revealed as appropriate and indispensable to exploring and investigating the role capacity development programmes could play for petroleum industry development and socio-economic transformation in South Africa. Furthermore, the triangulation method helped to understand not only the factors causing technical skills shortages, skills waste, or the deficit of positive human capital capacity, but also the suitable model/approach that could assist in overcoming, tackling, or solving the critical issue of scarce skills affecting the South African petroleum industry.

Finally, yet importantly, the above research process particularly demonstrates in practice the way the research design corresponds to the epistemological and ontological position of the study. According to Graham (2017), epistemology refers to the philosophy of knowledge and justification- the study of the theory of knowledge that explains the understanding of something and provides opportunities to answer questions such as how or why in refuting or establishing and confirming knowledge. Ontology refers to the philosophy of the world view of reality, the study of the nature of being, becoming, existence or reality, which assists people to answer questions such as "what" to define or compare and contrast phenomena or variables.

Thus, the research process provided clarification on the usefulness of the epistemological and ontological position of the study and determined the way in which capacity development interventions can boost organisational productivity, performance, and development. This research process allowed the prediction of possibilities for capacity development programme best practice to contribute to closing the gap of skills shortages and improving employees' capacity via skills training and development programmes (techniques/methods) that can generate effective organisational growth/expansion and socio-economic transformation in the country.

5.3 The case study method

According to Creswell (2018: 199), data collection in a mixed-methods case study typically involves collecting both quantitative and qualitative data that help to provide evidence for a case or cases, or to generate a case or cases. Therefore, a case can be descriptive: simply describe the case; exploratory: ending with a case; or explanatory: beginning with a case (Creswell, 2018: 199). For this study, an exploratory case study research design was practical to collect data, employing quantitative and qualitative data collection approaches through a convergent core design. The case study approach used in this study consisted of exploring the effects of capacity development programmes for socio-economic transformation in South Africa, with a focus on the case study of the South African petroleum industry.

Therefore, technical skills development and the retention of technical skilled employees, controlling skills waste and promoting positive human capital capacity development in the South African petroleum industry were the central focus of investigation in this study. However, for a wide understanding of issues related to scarce skills development in the South African petroleum industry, significant international case studies were explored as evidence in supporting the aim and objectives defined for this study. The Case studies explored, which are related to this study, included the Cambodian National Petroleum Authority (CNPA), the Angolan petroleum industry and the Nigerian petroleum industry case studies. Various other experiences and lessons of capacity development interventions in the petroleum industry from other world regions were also examined.

These case studies from other world regions were useful and assisted the researcher in capturing the international approaches used in tackling, reducing, or eradicating the issue of technical skills shortages in the petroleum industry. Additionally, case studies from other world regions were examined as evidence of successful best practice in capacity development programmes for technical, functional, and behavioural capacities development (human capital capacity development) in the petroleum industry. Moreover, looking at various gainful experiences and lessons from capacity development interventions in other world regions was a helpful approach to understand the mechanisms put in place to improve or develop the skills of the

workforce in various workplaces. Therefore, various methods of skills training programmes were implemented as suitable approaches for the effective development of human capital capacity in the workplace. Tables 2.13; 2.14; 3.1; 3.2 and 3.7 provide information on methods of skills development in the workplace. However, in South Africa, four active organisations operating/members of the South African petroleum industry constituted the sample of the current case study. Therefore, in this study, it was necessary to include key players like the South African petroleum industry Association (SAPIA), the government department of Energy (Petroleum sub-sector), Engen refinery and the Chemical Industries Education and Training Authority (CHIETA petroleum sub-sector). Consequently, it is significant to emphasise that information collected from these organisations contributed to unpacking issues related to human capital capacity development in the workplace.

Thus, after an investigation related to technical skills shortages affecting the petroleum industry, it was indicated that capacity development programmes are a vital approach in transforming the future of the South African petroleum industry through human capital capacity development in the workplace. Therefore, capacity development programmes in the workplace are considered to be the engine or locomotive (a useful tool) that can promote not only the petroleum industry development, but that can also support directly and indirectly related socio-economic activities in countries where capacity development programmes best practice can be appropriately implemented. Moreover, the case study of the South African petroleum industry was explored to examine the critical issue of technical skills shortages, as well as problems related to the retention of employees with technical skills, skills waste, and the deficit of positive human capital capacity in the South African petroleum industry.

Thus, the triangulation method assisted the researcher in drawing the cause-effects of technical skills shortages and other scarce skills across the South African petroleum industry (Creswell, 2018: 200). Accordingly, the four key players under investigation helped to understand the challenges affecting the South African petroleum industry and the probable way out from these challenges. Further discussions linking the choice of the four key petroleum organisations are provided in the following sections.

5.4 Research design

A research design consists of one of the ways of collecting accurate, sound, and reliable information about the effectiveness of the researcher's interventions in providing useful evidence (Kumar, 2011: 25). In addition, the research is conducted by providing the collection of relevant information with minimal expenditure of effort, time, and money through the conceptual structure. Therefore, the research design implemented for this study is a "triangulation approach", which consists of the mixing of quantitative and qualitative methods. Moreover, triangulation broadly refers to the combination of methodologies in the study of a single phenomenon (Noble, 2019; Heale, 2013 and Nelij, 2010). Specifically, triangulation means mixing approaches to get more viewpoints upon the variables being studied. Olsen (2004: 3) emphasised that social science triangulation is about the mixing of data or methods so that diverse viewpoints or standpoints cast light upon a topic.

Therefore, triangulation involves procedures that enable the validation of data from both quantitative and qualitative studies. In addition, triangulation assists in confirming assumptions where findings from the qualitative study confirm those from quantitative study. Moreover, this study used the triangulation approach in converging the survey data and the interview data for purposes of reflecting the process of interaction, priority, timing, and mixing data. Consequently, the triangulation method comprising quantitative data collection and analysis and qualitative data collection and analysis was designed following the framework presented in Figure 5.3, which comprises descriptions, relationships, comparisons, as well as interpretation (Creswell, 2011: 69). In this study, data were collected by employing mixed instruments, namely questionnaires and interview questions.

Creswell (2009: 204) and Turner (2010) defined a mixed methods approach as combining both quantitative and qualitative research methods in a research study. For that reason, in this study, the mixed methods were complemented by a rigorous analysis of secondary sources of information, which assisted the researcher to obtain useful results that supported the researcher with the breadth and depth of understanding, as well as corroboration of the phenomenon (Turner, 2010). Thus, the survey approach provided a numerical description of trends using a simple

questionnaire. The case study was the strategy of inquiry in which the researcher explored in-depth activities or processes, which led to gathering detailed information over a sustained period. Finally, the triangulation approach assisted and facilitated the combination, comparison, and interpretation of results from both quantitative and qualitative data.

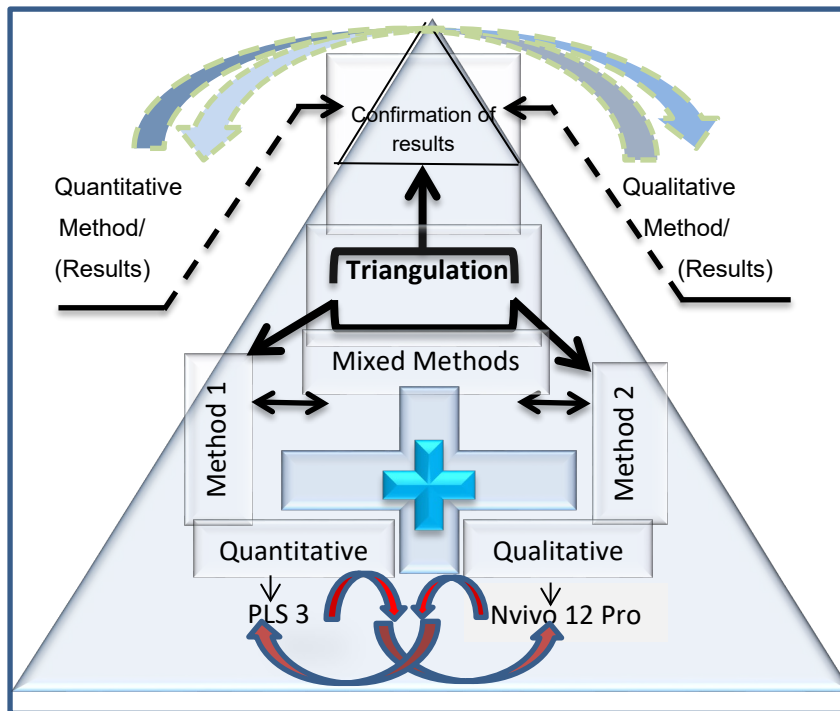
5.5 Triangulation Method

There are various explanations relating to an understanding of the concept “Triangulation”. Earlier, triangulation was described as a concept that refers to the practice of applying multiple approaches or different sources of data to gathering and analysing data in enhancing the credibility of a research study (Nelij, 2010). According to Wilson (2014), triangulation is just another term for mixed methods. Furthermore, Wilson (2014) emphasised that triangulation in mixed methods involves:

- Using more than one method to gather data;
- Using different sources of data collection;
- Using several people (more than one) in the data gathering and analysis process; and
- Approaching data with various theories or perspectives in mind to extend the possibilities of producing knowledge, etc.

In light of the aforementioned, triangulation consists of associating quantitative with qualitative research methods; thereby examining data from different groups or sources. Therefore, triangulation can be used in quantitative and qualitative research. In addition, triangulation brings into line multiple perceptions to ensure a greater understanding of the phenomenon of interest. The objective of using triangulation (mixed methods: quantitative and qualitative data gathering and analysis) in this study was to increase the validity of the research results. Figure 5.2 describes the way in which the triangulation approach was applied in this study.

Figure 5.2 Triangulation approach applied to this study



Source: Self-generated by the researcher

Figure 5.2 denotes the triangulation process applied (combining both quantitative and qualitative data to answer a specific research question) in this study, which has generated one of the following results (Heale, 2013):

- Converging the results that led to the same conclusion; and
- Relating the results to different objects (phenomena), which were complementary to each other and used to supplement the individual results.

However, in this study, mixing and converging results from method 1 and 2 (Figure 5.2) aimed to increase the validity through complementary results from both quantitative and qualitative aspects of the phenomenon under study. Accordingly, this study used triangulation (mixing qualitative and quantitative data) for the purpose of reflecting the process of interaction, priority, timing, and mixing data. Quantitative data collection and analysis, and qualitative data collection and analysis were therefore designed following the convergent framework (Figure 5.3: Mixed Methods Designs for

Data Analysis), which involves descriptions, relationships, comparisons, as well as predictions (Creswell, 2011: 69).

5.5.1 Benefits aligned to the triangulation method usage in this study: Mixing of qualitative and quantitative approaches

Creswell (2015:2), Noble (2019), Heale (2013) and Nelij (2010) provided comprehensible information in relation to the usefulness of triangulation usage in a research study. They denoted that the core assumption of mixing approaches in a triangulation method enables the researcher to combine statistical trends (quantitative data) with stories and personal experience (qualitative data). This collective strength provided a better understanding of the research problem than either method alone. Additionally, in this study, triangulation allowed a more complementary and complete analysis of the research situation. According to Creswell (2011: 6) and Creswell (2015: 5), combining qualitative results with quantitative findings or explaining the survey results from both approaches provides the following benefits:

❖ In qualitative research, the benefits include:

- The provision of detailed perspectives of a few people;
- The Capture of interacting voices from participants;
- The experience of participants allowed a better understanding of the research context; and
- With interactive enjoyment, the views and opinions of participants were freely apprehended.

❖ In quantitative research, the benefits comprise:

- The drawing of conclusions from a large number of people;

- Data were analysed efficiently by using the smart PLS 3 statistical software package;
- The relationships within data were investigated;
- Probable causes and effects were examined;
- It allowed the control of bias; and
- It allowed the appeal to people's preference for numbers.

Furthermore, Creswell (2011: 64) indicated that triangulation (mixing quantitative and qualitative data) is relevant to the level of interaction between both approach strands, the relative priority of the strands, the timing of the strands and the procedures for mixing the strands. According to Creswell (2011: 64), a strand is a component of a study that encompasses the basic process of conducting mixed methods research: asking/posing questions, collecting data, analysing data, and interpreting results based on that data. Moreover, the level of interaction is the extent to which the two strands in mixed methods are kept independent or interact with each other (Creswell, 2011: 64). Thus, the fundamental reasons aligned to the usage of both qualitative and quantitative research approaches are comprehensively discussed in the following sections.

5.5.2 Qualitative and quantitative research

5.5.2.1 Qualitative research

Maree (2007: 51) described qualitative research as understanding the procedures and the social and cultural settings which cause various behavioural arrays and is mostly concerned with discovering the “why” questions of the research. According to Creswell (2018: 211), qualitative research (data analysis) procedures involve selecting the analysis approach based on the research questions. In the method of gathering and analysing qualitative data, this study used the Nvivo software package (12 Pro) for qualitative data analysis programme.

This method assisted the researcher in the process of coding data, developing descriptions and themes, grouping codes and interrelating themes based on the overall qualitative approach, or developing abstract categories into a smaller set of themes. Therefore, the qualitative data for this study were derived from interviews, based on the objectives defined, which are related to factors that contribute to socio-economic transformation in South Africa; the nature of capacity development programmes for the South African petroleum industry development; and the extent to which capacity development programmes focussing on skills development have contributed to petroleum industry development and socio-economic transformation in South Africa. In addition, the qualitative data included information related to the potential challenges/barriers affecting the implementation of a capacity development programme framework in the South African petroleum industry and the international models of capacity development programmes that promote human capital capacity development.

Lastly, the qualitative data involved an investigation of appropriate capacity development best practice models aligned to human capital capacity development for the South African petroleum industry development and socio-economic transformation. Nevertheless, the qualitative research was a supportive approach to quantitative data, which consisted of identifying the nature, challenges and causes related to technical skills shortages experienced by the South African petroleum industry. Accordingly, the research questions (interview questions) were formulated based on the statements and sub-themes, which were derived from the main theme of the study. Additional information related to qualitative data collection process is provided in the next section (interview).

5.5.2.1.1 Interview

Kumar (2011: 137) stated that there are many definitions of the concept “interview”. It may be defined as the way the conversation, dialogue, talk, discussion, consultation, or meeting involves an interviewer asking or reading questions to respondents and recording their answers. In the field of social science study, an interview refers to a conversation whose purpose is to gather a description of the interviewee with respect to the interpretation of the meanings of the described phenomenon (Alshenqeeti,

2014: 39). Therefore, the interview seeks to explore and describe the quality and nature of how respondents understand the phenomenon by freely expressing their views and opinions based on the experience and knowledge they have from the field of study. In other words, the interview enables respondents to express their own opinions, thoughts, and feelings. Furthermore, an interview may be understood as an extendable conversation between partners, aiming to gather in-depth information about the topic or subject through which a phenomenon may possibly be interpreted in terms of the meanings' interviewees bring to it. According to Alshenqeeti (2014: 39), studies have indicated four ways of conducting interviews in social science. The first technique consists of a structured interview, which is typically organised by setting predetermined straight or direct questions that require immediate answers from respondents. The advantage of this type of interview is that it provides uniform information and assures the comparability of data (Kumar, 2011: 138).

Secondly, unstructured, or open-ended interviews depict an open situation through which greater flexibility and freedom is offered to both interviewers and interviewees in terms of planning, implementing, and organising the interview content and questions. In this type of interview, the interviewer would need to be more skilful in following up interesting developments to give the interviewee opportunities to interact on various issues. Thirdly, the semi-structured interview is the one that allows depth to be achieved by providing an opportunity on the part of the interviewer to probe and expand on the interviewee's responses. This type of interview allows the researcher to use a basic checklist that could possibly help cover all relevant areas of research questions. Moreover, the advantage of a checklist is that it allows for in-depth probing while permitting the interviewer to keep the interview within the parameters traced out by the aim of the study.

The fourth type of interview refers to the focus group interview in which respondents are selected based on a purposive, although not necessarily representative, sampling of a specific population, focused on a given issue or theme. In this type of interview, the researchers need to be skilful in chairing the attention of the physical layout of the room and group size. Nevertheless, this technique can sometimes be a very time-consuming and effortful process, but respondents may develop ideas collectively, bringing forward their own priorities and perspectives to create theory grounded in the

actual experience. For the purpose of this study, the structured interview was implemented through which the researcher has settled predetermined straight or direct questions from which immediate answers from respondents were required. Therefore, the interview responses comparing to data collected from questionnaire seemed to be matching, corresponding and powerful in producing narrative data that allowed the researcher to investigate respondents' views in greater depth, concerning capacity development impacts or effects on human capital capacity development, petroleum industry development and the socio-economic transformation process in the country. Furthermore, 9 in-depth face-to-face interviews were conducted in four organisations, all members of the South African petroleum industry: including SAPIA, CHIETA, the South African Department of Energy (petroleum sub-sector) and Engen refinery.

5.5.2.2 Quantitative Research

Maree (2007: 145) described quantitative research as a systematic and objective process of utilising numerical data from a certain population to determine the relationships between variables and to simplify results. In this study, a Likert scale technique was used to categorise questions to gather and apprehend the opinions/views of respondents using five points, from strongly disagree to strongly agree (Myers, 2017: 59) and (Pietersen and Maree, 2007:155). The quantitative method was used to allow the statistical testing of data (Daniel, 2016: 92 - 94). Therefore, the steps in gathering and analysing quantitative data involved the selection of appropriate inferential statistical tests based on research questions, scales type, number of variables and distributions. Additionally, quantitative research was appropriate when the measures were quantifiable and assumptions were formed and tested (Daniel, 2016: 92 - 94).

Therefore, the purpose of quantitative research was to produce quantifiable summaries of the data. It focused on the methodology, procedure, and statistical amount of validity. However, in this study, quantitative data derived from the questionnaire included the biographical information of the respondents, their skills perception/level on issues that relate to petroleum industry development, skills shortages, capacity development programmes, the South African petroleum industry, and the socio-economic transformation process in South Africa.

Table 5.2 illustrates and provides more clarification about quantitative and qualitative data collection. The analysis of quantitative data involved the usage of Smart Partial Least Squares (PLS), also known as structural equation modelling (PLS-SEM), which is a variance-based Structural Equation Modelling (SEM) technique that relies on the partial least squares' algorithm (Delaigle and Hall, 2012). Clarity and understanding relating to this model are provided in section 5.15 further below.

5.6 Population and target population

O'Leary (2004: 102) defined a population as the total membership of a defined class of people, objects, or events. Sekaran (2006: 265) defined a target population as a population of interest to which a researcher intends to apply the research results. According to Sekaran and Bougie (2009), a population represents the entire group of people, events, activities, or things of interest that the researcher expects to investigate. In light of the aforementioned, a target population can be understood as the full set of cases from which samples are taken. In this study, samples were taken from the South African petroleum industry.

Therefore, the researcher aimed to investigate strategic organisations involved in the South African petroleum industry that are playing a critical role in areas of skills development and planning, as well as in terms of their contribution to socio-economic growth through the flow of various services and petroleum products they provide to the country. As indicated earlier in this study, the target population consisted of four important organisations operating in the South African petroleum industry. These include:

- **CHIETA:** Chemical Industries Sector Education and Training Authority;
- **SAPIA:** South African Petroleum Industry Association;
- **South African Department of Energy:** The Department of Energy's Hydrocarbons and Energy Planning Branch (Petroleum sub-sector); and
- **ENGEN Refinery:** Member of SAPIA.

The incentive in targeting these organisations is linked to the aim and objectives defined for this study, as well as to the vital socio-economic role they play in the country. Firstly, SAPIA was selected and targeted because of the collective interests of the South African petroleum industry it represents. In addition, SAPIA plays a strategic role in addressing a range of common issues relating to the refining, distribution, and marketing of petroleum products, as well as promoting the petroleum industry's environmental and socio-economic progress. SAPIA is also the voice of the South African petroleum industry by proactively engaging with key stakeholders, providing research information, expert advice and communicating the industry's views to the government, members of the public and media (SAPIA Report, 2015: 12-13). As long as several issues such as safety, reliability and environmental performance of critical process plants are driven by the skills of people, SAPIA has been practically involved in the process of ensuring the sustainability of skills for the future.

Furthermore, the role of SAPIA in investigating, quantifying, and understanding the extent of scarce and critical skills gaps amongst its members (petroleum companies) was a good reason for this researcher to explore its implication and efforts in the process of human capital capacity development in the South African petroleum industry. However, studies revealed that learning interventions to breach industry-identified skills shortages was required and that petroleum industry employers have expressed a need for a high level of technical skills (SAPIA Report, 2012). Consequently, SAPIA was targeted as one of the key organisations addressing the issue of skills shortages of engineers and technical operators in the South African petroleum industry, and which suggested possible interventions and development programmes for scarce skills development.

However, SAPIA's collaboration with government, the Department of Energy, Education and Training (DET) colleges, CHIETA, as well as universities to address the issue of skills shortage needed action, which must be absolutely imperative for the future growth of the industry. Consequently, this study intended to be part of that needed action by attempting to develop a model or framework that could contribute or facilitate the development and retention of technically skilled employees in the South African petroleum industry. For example, the CDP-PUSH-Effects model was developed in this study as a skills development framework to assist SAPIA and other members of the South African petroleum industry in promoting technical skills

development and allowing constructive and helpful collaboration with educational institutions such as Durban University of technology (DUT) to meet the requirements of the petroleum industry and to maximise available resources. This initiative could possibly collectively generate greater impacts on employees' capacity development in the workplace and improve the common labour pool. Members of the South African petroleum industry that are also involved in the process of human capital capacity development include CHIETA, the National Petroleum\ Employers Association (NPEA), government departments, institutions of higher learning and other partners. Therefore, the South African Department of Energy (petroleum industry sub-sector) was carefully chosen as the target population in this study because the Energy department pursues the mission to regulate and transform the petroleum sector for the provision of secure, sustainable, and affordable energy.

Furthermore, the department of Energy has the mandate to ensure and secure the sustainable provision of energy for socio-economic development (South African Department of Energy Report, 2020). Additionally, the South African Department of Energy was mostly targeted in this study because of its strategic objectives, which derive from the National Development Plan (NDP) and which envisage that by 2030, South Africa will have an energy sector that promotes economic growth and development, social equity and environmental sustainability. Thus, its key objectives involve attaining universal access to energy; accessible, affordable, and reliable energy, especially for the poor; diversifying primary energy sources and reducing dependency on coal; good governance, which must also facilitate and encourage private sector investments in the energy sector; and environmentally responsible energy provision (South African Department of Energy Report, 2020).

Moreover, the Department of Energy's Hydrocarbons and Energy Planning Branch is responsible for coal, gas, liquid fuels, energy efficiency, renewable energy, and energy planning (South African Department of Energy Report, 2020). Therefore, the Department of Energy's Hydrocarbons and Energy Planning Branch, as an active member of the South African petroleum industry, was investigated in line with its ambition for promoting efficient manufacturing, wholesaling, and retailing in the petroleum industry. This study aimed to explore capacity development programmes in the South African petroleum industry linked with the Department's objectives of facilitating an environment conducive to efficient and commercially justifiable

investment; promoting the advancement of historically disadvantaged individuals; and creating employment opportunities and small businesses in the petroleum sector. Thirdly, CHIETA was a target for this study due to its linkages with the Department of Trade and Industry's strategic sub-sector, which is identified as Liquid Fuels Associated products (CHIETA Report, 2014). In addition, the petroleum sub-sector of CHIETA was significantly targeted because it is linked with other petroleum companies or industries through petroleum operations that include storage and transport, wholesale and retail, safety, and security, as well as environmental protection and conservation. Moreover, CHIETA remains presently engaged in a range of partnerships, agreements and plans to contribute to both the development of new skills for the sector, as well as the development of skills within the existing workforce (CHIETA Report, 2014).

Furthermore, CHIETA is the South African catalyst (promoter and facilitator) for enhancing skills, economic growth, and employability in different sectors of the economy, including the petroleum industry: petroleum and base chemicals skills plan for the petroleum sub-sector (CHIETA Report, 2014). Therefore, CHIETA's role is to achieve the mandate of the Chambers (Petroleum and Base Chemicals Skills Plan for the Petroleum Sub-sector) in terms of schedule 9 (a) of the SDA 97 of 1998 to consult with the sub-sectors of the Chemical Sector in areas of skills development and planning. Lastly, South Africa's petroleum industry has currently six operating refineries, including four crude oil refineries: CHEVREF, ENREF (ENGEN), NATREF and SAPREF located on the coast and two others: CTL and GTL fuels (by Sasol) and Natural gas to liquid fuels (by PetroSA) located inland. All six refineries are members of the South Africa Petroleum Industry Association (SAPIA Report, 2016: 19).

Therefore, amongst the four crude oil refineries located on the coast, the ENREF/ENGEN refinery was targeted for this study due to its proximity and being an active member of SAPIA that supports skills training programmes of employees in the workplace. ENGEN refinery is located in Durban, the same region/city where the Durban University of Technology (DUT) is situated. Moreover, the study led by SAPIA concerning technical/scarcely skills shortages and for reasons of safety, reliability and environmental performance relating to the critical process plants across its member companies, including ENGEN refinery, was to quantify and understand the extent of scarce and critical skills gaps and required learning interventions to breach these

industry-identified skills shortages (SAPIA Report, 2016). Therefore, ENGEN refinery as well as other crude oil refineries in the country relies on national education systems that contribute to producing a consistent pool of highly qualified technical graduates able to ensure and sustain petroleum industry development and performance. Thus, exploring capacity development programmes from Engen refinery particularly and the South African petroleum industry as a whole was significant in promoting more efficient and justifiable investment in human capital capacity development; contributing to the advancement of disadvantaged individuals in the workplace; and creating employment opportunities and opportunities for small business development within the petroleum sector. However, useful information from the aforementioned organisations facilitated and assisted the researcher to identify the real need for capacity development interventions in the South African petroleum industry. Consequently, targeting these populations/organisations was useful in having deeper perceptions/views of employees in relation to the defined objectives.

5.7 Sampling design

According to Creswell (2018: 175), a sampling procedure to collect data involves determining the location or site for the research; the participants/respondents who are available to provide data to the researcher; and the technique applied related to how participants are selected, as well as the number of participants needed to answer the research questions. In this study, it is indispensable to indicate that sampling procedures in data collection applied both qualitative and quantitative research, although there were fundamental differences in how they were typically addressed, especially in terms of the sampling approach and the sample size. Brand and Kinash (2010) described research methods as techniques or tools to collect and analyse data and help the researcher to achieve the study objectives.

Therefore, it may be acceptable that the methods and the techniques/processes used by the researcher to conduct research and the methodology itself became the discipline or knowledge acquired during the practice of using these methods. The sampling design applied in this study was non-probability sampling. According to Creswell (2018: 177) and Sekaran (2013: 252), non-probability sampling consists of selecting individuals who are available and can be studied, and which represents a

group of sampling techniques that assist researchers to select units from a population that they are interested in studying. This technique made it very easy to identify every unit of the population, which did not get an equal chance of participation in the investigation, and the selection of the sample was made based on the subjective judgment of the researcher. However, judgmental sampling allowed the sample to be chosen for a specific purpose (Alvi, 2016: 13). Once again, non-probability sampling was useful as a technique through which the samples were gathered in a process that did not give all the individuals in the population equal chances of being selected. Hence, the elements in the population did not have any probabilities attached to their being chosen as sample subjects. In light of the aforementioned, it was being explicitly asserted that the findings from the study of the sample could not be generalised (Sekaran, 2013: 252).

Nevertheless, in this study, results from exploring capacity development programmes for socio-economic transformation in South Africa, focussing on technical skills development in the South African petroleum industry, may possibly be generalised. This declaration can be justifiable given that it is possible that the entire South African petroleum industry and other public-private organisations reflect/reveal a real concern in relation with the deficit of positive human capital capacity, skills waste, and technical skills shortages. Therefore, it seems imperative that the usage or application of capacity development programmes, which promote human capital capacity development in the workplace, must be addressed as a matter that generally involves more than a single private or public organisation. The simple reason that could justify the imperative of using capacity development programmes to a large extent in various industries or organisations is that industrial revolutions or the speed of technological advancement embark all businesses on megatrends of digitisation, mobilisation, screenification, dis-intermediation and robotisation (Anderson, 2020).

Furthermore, transformation, intelligisation, automation, virtualisation and anticipation are results of business environment evolution and uncertainties, which will always require technical, functional, and behavioural capacities development (human capital capacity development) through skills training programmes in the workplace. Therefore, capacity development programmes, technical skills development or positive human capital capacity development are strategic assets to be considered as

scarce resources in all spheres of life, including for example music, logistics, banking, healthcare, agriculture, etc. Moreover, technology is changing, and businesses are moving closer to people: desktop, laptop, or brain computer interfaces, etc. Therefore, the findings from the study of the sample (South African petroleum industry: SAPIA, CHIETA, ENGEN refinery and the Government Department of Energy: petroleum sub-sector) could be applicable to a large number of industries, organisations and sectors of the national economy. Thus, the non-probability sampling technique allowed the researcher to select appropriate respondents who are experts, representatives, and active members of the South African petroleum industry, playing an important role whether in the skills development of employees or contributing to the socio-economic transformation process in the country. They also provide advice to the government for making responsible decisions in terms of investments for petroleum industry development and human capital capacity improvement/development within the energy sector.

5.7.1 Features of Probability and Non-Probability sampling

Table 5.1 illustrates the features of probability and non-probability sampling. It provides elements that led the researcher to choose and use a non-probability sampling method in this study.

Table 5.1 Features of Probability and Non-Probability sampling

Probability	Non-Probability
Informed by mathematical theory: rigorous rules and procedures	Judgmental theory
Selection is by chance: principle of random selection	Selection is by choice: principle of Judgment
Detailed sampling frame	Works without a sampling frame
Chance is known in advance	Chance is greater but not known
Equal chance	Dependent on the researcher
True representative sample	Reliable
Results generalised	Insight into
Needs a lot of resources (TFSK)	Little
Large samples	Small samples

Source: Adapted from Mutinta (2013)

Table 5.1 comprises and compares the components that are useful in using non-probability sampling instead of probability sampling. It provides valuable information that led to the choice made by the researcher in applying non-probability sampling in this study.

5.7.2 Benefits of using a Non-Probability sampling or judgemental sampling technique in this study

According to Mutinta (2013), non-probability sampling or judgemental sampling is good for exploratory studies (investigating a phenomenon that is not). This study explored capacity development programmes for socio-economic transformation in South Africa. It focussed on technical capacity development in the South African petroleum industry. Therefore, the benefits involving the choice of non-probability sampling in exploring and investigating human capital capacity development in the South African petroleum industry are as follow:

- Non-probability sampling allowed the researcher to:
 - Select units that will provide the information that is needed; and
 - Gain insights into the phenomenon.
- Usability of non-probability sampling:
 - Rules and procedures were easier to implement;
 - Small samples in qualitative research;
 - Time-saving; and
 - Economical.

5.8 Sample size

In mixed methods study, sample size is appropriate when researchers want to understand more about the contextual conditions that are especially relevant to the phenomenon under study (Sharp, 2011: 38-39). Therefore, a sample can be defined as a group of people selected from a population for investigation purpose. It represents a population size selected and settled by the researcher and included in the study (Oribhabor, 2020). Sampling consists of participants who make available data that is necessary to conclude with consideration to a larger group.

According to Creswell (2018: 177), the sample needs to be sizeable enough to meet the requirements of planned statistical tests and provide a good estimate for the parameters of the population. Therefore, in this study, 292 respondents participated in completing the questionnaire and 9 face-to-face in-depth interviews were conducted. Thus, in total, 301 respondents participated in this study, while it was projected to be a total participation of 400 respondents, including 388 questionnaires distributed and 12 in-depth interviews. Information relating to the sample size concerning the four organisations under study is indicated in Table 5.2.

Table 5.2 Sample size

Organisations	Participants' category	Sample Size	Data collection method	Relevance for study
South African Petroleum Industry Association (SAPIA)	Managers	1	Face-to-face Interview Questionnaires distribution	SAPIA is a South African leading organisation that plays a strategic role in addressing a range of common issues relating to petroleum industry activities in the country
	11 Respondents			
	Staff Members	10	Face-to-face interviews Questionnaires distribution	The Department of Energy: Petroleum sub-sector pursues the mission to regulate and transform the petroleum sector for the provision of secure, sustainable and affordable energy. It has the mandate to ensure and secure a sustainable provision of energy for socio-economic transformation.
	90 Respondents			
SA Department of Energy: The Energy's Hydrocarbons and Energy Planning Branch (sub-sector)	Managers	3	Face-to-face interviews Questionnaires distribution	One of the major players in the South African petroleum industry, which provided accurate information to the researcher.
	101 Respondents			
CHIETA: Chemical Industries Education and Training Authority (Petroleum sub-sector)	Managers	3	Face-to-face interviews Questionnaires distribution	ENGEN refinery as well as other crude oil refineries in the country relies on national education systems, where they contribute in producing a consistent pool of highly qualified technical graduates able to ensure and sustain the petroleum industry development and performance.
	101 Respondents			
Engen Refinery industry	Managers	2	Face-to-face interviews Questionnaires distribution	400 questionnaires including 388 questionnaires distribution and 12 face-to-face interviews were projected.
	99 Respondents			
Total: 4 Organisations Participated in this study.	301 respondents participated in this study	9	Face-to-face interviews were personally administrated, Completed questionnaires were collected.	
		292		

Source: Self-generated by the researcher

Table 5.2 illustrates the sample size for this study. It comprises elements that include organisations that participated in the study, participants' category and the total number of participants, data collection method and the relevance of each organisation for this study. Table 5.2 also specifies that 301 respondents participated in this study, including 9 face-to-face interviews with managers and 292 completed questionnaires collected from the above-mentioned organisations.

However, it is very important to indicate that the process of data collection was affected by the COVID-19 pandemic, given that in this challenged period, many employees were working at home and some of them became unreachable. Many other employees declined to participate in the study process due to the volume of their workload combined with family responsibilities. Therefore, working at home became a challenge not only for researchers, but also for various categories of employees. Although the usage of the internet facilitated connection with some participants whether in the workplace or at home, only few respondents were actively helpful in completing the questionnaires online. There were many challenges in this process, but opportunities were created through the procedure.

5.9 Pilot test

According to Calitz (2009: 256), a pilot test is a mini-version of a full-scale study, or a trial-run done in preparation for the complete study, which gives the researcher a clear vision of the research topic and questions; the techniques and method which were applied; and the depiction of the research schedule. Twenty participants were piloted, all employees randomly selected from organisations that are members of the South African petroleum industry but who were not part of the sample population. The pilot test for this research study was defined as both a feasibility study as well as a pre-testing of instruments: namely the questionnaires and interviews schedules. Therefore, the pilot test for this study assisted the researcher in determining if there were flaws, limitations or other weaknesses within the interview schedule and questionnaire design, allowing the researcher to make necessary revisions before the implementation of the final study.

The pilot test also assisted the researcher with the refinement of research questions, which took into account the flaws in factors including question skips, timing and respondents' interest and attention (de Vaus, 2014: 116). The pilot test also assisted in attesting to the validity of the questions asked and to check if they were understandable. Questionnaires were tested according to a variety of information regarding the aim and objectives defined, available from selected literature on petroleum industry development, human capital capacity development and socio-economic development theories. Thus, a very common and useful approach in survey

research is measured to understand how respondents feel or think about something by using Likert scales (Pietersen and Maree, 2007:155). Likert scales were used in this study to analyse how strongly subjects agreed or disagreed with statements on five-point scales indicated as: Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4 and Strongly agree = 5 (Sekaran and Bougie, 2009: 141, 152).

5.10 Data collection methods

According to Creswell (2011: 69), data collection refers to obtaining useful information on fundamental quality characteristics produced through a process. In qualitative research, data is usually collected from a smaller sample, which provides rich and deep insight into the phenomenon under study. In this study, methods of collecting qualitative data involved direct interactions with individuals on a one-to-one basis to gather people's perceptions, meanings and definitions of situations and constructions of reality (Punch and Oancea, 2014). In addition, the research process used questionnaire distribution, which included both closed and open-ended questions (Sekaran and Bougie, 2009: 212). According to Pietersen and Maree (2007: 345), closed-ended questions are used for the following advantages:

- They are simple and quick to answer;
- Coding and statistical analysis are straightforward; and
- Sensitive questions are answered without difficulty.

In the process of collecting data, the researcher travelled to each site/location of the targeted population (organisations) for face-to-face interviews, and he gave out questionnaires to available participants between August 2019 and November 2020. Locations for data collection consisted of two provinces, including KwaZulu Natal and Gauteng and two cities, including Durban and Johannesburg where the organisations targeted for this study are based. However, due to measures of the COVID-19 national lockdown period declared by the government from March to December 2020, the process of data collection suffered several disruptions.

Thus, the research purpose statements, and research questions aligned to data collection methods are consecutively and sequentially described in the following sections.

5.10.1 Research purpose statements

Creswell (2018: 152–153) stated that it is necessary to apply triangulation methods to a mixed methods research study, from which an understanding of the purpose statement involves the usage of both qualitative and quantitative purpose statements. The purpose statement refers to the aim of the study. The aim or purpose of this study was to explore capacity development programmes for socio-economic transformation in South Africa, using the case study of the South African petroleum industry. Concerning the qualitative purpose statement, Creswell (2018: 152–153) indicated that a qualitative purpose statement conveys the overall purpose of the qualitative study and identifies a central phenomenon, the study participants, the research site for the study and the type of qualitative design in the study.

Therefore, this research study explored and investigated the critical issue of technical skills shortages in the South African petroleum industry. The critical factors affecting/promoting the effective usage of capacity development programmes were examined in supporting human capital capacity development as a driver of petroleum industry development and socio-economic transformation. In addition, the way in which skills training programmes are provided in the petroleum sector and the success or failure of such skills training programmes in relation with employees' skills shortages/development and in line with the productivity/effectiveness/performance of petroleum organisations were analysed. Moreover, capacity development programmes were also explored using international practices/models by considering their impact on petroleum industry development and socio-economic transformation.

Thus, the purpose of this study included the identification of actions that both the petroleum industry and the South African government could undertake in supporting human capital capacity development for petroleum industry development and socio-economic transformation. In light of the aforementioned, face-to-face interviews aimed to determine the perceptions of participants from organisations such as CHIETA

(Chemical Industries Education and Training Authority), SAPIA (South African Petroleum Industry Association), the South African Department of Energy (the Department of Energy's Hydrocarbons and Energy Planning Branch) and ENGEN refinery. Concerning the quantitative purpose statement, Creswell (2018: 153) indicated that in a quantitative purpose statement, the researcher conveys the overall quantitative purpose of the study and presents the variables in the study, the participants, and the site for the research. Therefore, variables that involved the purpose of this study included elements of the PESTIE factors, taking into consideration the political, economic, and social factors.

The participants were employees of the aforementioned organisations. As indicated earlier, the research site involved the physical address/location of the four organisations (workplace) to which the researcher travelled for in-depth interviews or for questionnaire distribution. Moreover, Creswell (2018: 154) emphasised that a mixed methods purpose statement conveys the overall purpose of a mixed-methods study and includes the intent of the study, the type of mixed methods design, qualitative and quantitative purpose statements, as well as the justification for integrating qualitative and quantitative data. Thus, the convergent design approach allowed the selection and implementation process of mixing and analysing qualitative and quantitative data/results.

5.10.2 Research questions

Research questions play a central role in the process of conducting a study, particularly the decision to use a mixed-methods approach (Tashakkori, 2010: 276). Creswell (2018: 163) stated that research questions narrow the purpose statement into specific questions and predictions that are examined in the study. Therefore, the mixed methods study involves two types of research questions, including qualitative and quantitative research questions/methods. According to Rensburg (2017: 40), qualitative and quantitative research questions must be linked directly to the overall statement of the research purpose. Creswell (2018: 163) indicated that qualitative research questions focus and narrow the qualitative purpose statement and are stated as questions, not hypotheses.

They typically include a central question and several sub-questions, while quantitative research questions focus on the purpose statement through research questions that relate to variables. However, data from both quantitative and qualitative research questions were mixed, integrated, and interpreted. Therefore, mixed methods research questions are necessary in a mixed-methods study because it involves the integration of two databases. In this study, qualitative and quantitative research questions were clearly and directly focussed on the research theme and sub-themes (aim and objectives). Rensburg (2017: 40 - 41) stated that the research questions, if well written clearly and directly, can be well answered and generate new insights.

Thus, the researcher ensured that the research questions were understandably simple and direct for the participants. Moreover, the researcher developed mixed methods research questions based on the research aim and objectives and incorporated questions related to the CDP-PUSH-Effects model, which was developed by the researcher in promoting skills training programmes in the workplace (tackling the skills shortages), supporting petroleum industry development, and backing up the socio-economic transformation process in the country. Section A to Section H constituted the main objectives from which the main questions were structured (Table 5.3). Therefore, the sub-theme questions emanating from the research objectives can be viewed in Appendix D.

Table 5.3 Research objectives' structure

Section A	Biographical information
Section B	Objective 1: Examining the Factors that contribute to socio-economic transformation in South Africa
Section C	Objective 2: Identifying the nature of capacity development programmes in the South African petroleum industry
Section D	Objective 3: Investigating how capacity development programmes can contribute to socio-economic transformation in South Africa
Section E	Objective 4: Investigating the extent to which capacity development programmes focussing on skills development has contributed to the petroleum industry and socio-economic transformation in South Africa
Section F	Objective 5: Identifying the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry
Section G	Objective 6: Exploring the international models of capacity development programmes that promote human capital development, petroleum industry development, and socio-economic transformation

Section H	Objective 7: Developing an appropriate capacity development-best practice model aligned to human capital capacity development for the South African petroleum industry development and socio-economic transformation

Source: self-generated by the researcher

Table 5.3 points out important sections of the study, which are the research objectives. Therefore, Section A includes the biographical information of respondents and questions that relate to gender, age and level of education/training qualifications, position, or occupation of respondents within their respective organisations, work experience, as well as the race group of participants involved in this study. Sections B to Section H indicate the objectives focused on research questions that relate to the main topic. Furthermore, the questions in the questionnaire were arranged following the Likert scale numbers 1 to 5 to demonstrate the degree of understanding, perception, and agreement of respondents, using 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree or 5 = strongly agree. The numbering and degree of agreement are based on the Likert scales analysis method of rating items (Myers, 2017: 59 and Rosnow, (1996: 105).

5.11 Data analysis

Data analysis in mixed methods research relates to the type of research strategy chosen for the procedures. According to Creswell (2018: 209), data analysis in mixed methods consists of separately analysing the quantitative data using quantitative methods and qualitative data using qualitative methods. Furthermore, data analysis involves combining both databases using approaches that mix or integrate the quantitative and qualitative data and results (the mixed methods analysis). The analysis occurs from both quantitative (descriptive and inferential numeric analysis) and qualitative (description and thematic text analysis) approaches and often includes the two approaches (Creswell, 2009). In this study, the analysis of quantitative data employed the Smart Partial Least Squares path modelling (version 3/PLS3), also known as Structural Equation Modelling (PLS-SEM), which is a variance-based structural equation modelling technique that relies on the partial least squares' algorithm (Delaigle and Hall, 2012).

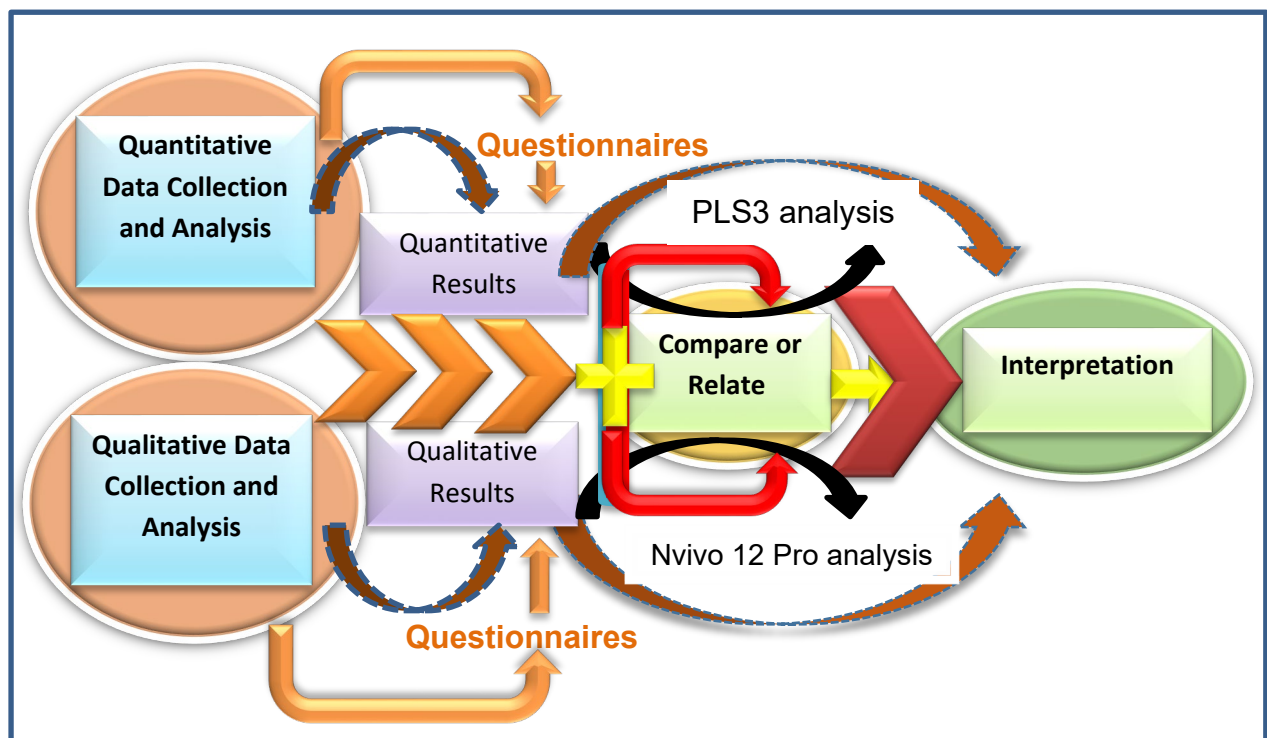
The concept Partial Least Squares can be understood as the computation of the optimal least squares fit to part of a correlation or a covariance matrix. According to Chen (2019), Partial least squares (PLS) can solve both single and multi-label learning problems. Furthermore, Pirouz (2006:2) indicated that this model or analysis (PLS) can measure a multivariate statistical technique that allows comparison between multiple response variables and multiple explanatory variables. In addition, Pirouz (2006: 2) denoted that the PLS analysis and causal modelling was introduced by Wright in the 1920s and later developed in the 1960s by Herman O.A. Wold.

The goal of PLS is to predict purpose such as endogenous or dependent measures Y variables from exogenous or descriptive/explanatory X variables, to describe the common structure underlying the two variables and to identifying factors which are a linear combination of the explanatory variable X (Known as latent variable) and variable Y (response) (Pirouz, 2006: 3-4). The PLS model was used in this study because it is an efficient alternative tool, more advanced than SPSS (Kodua, 2019). PLS is widely applied in the business and social sciences to predict endogenous latent variables, and to estimate as well as test relationships between latent variables (causal analysis). PLS can handle both factor models (reflective measurement) and composite models (composite-formative measurement) including first, second and third order modelling that can be better viewed in Chapter Six.

In addition, the analysis of qualitative data employed Nvivo software (12 pro) for thematic data analysis. The two techniques were helpful and assisted the researcher in terms of the interpretation of numerical and theoretical data within the tables and graphs, which represented an easier way to understand data analysis, particularly in explaining the necessity for implementing capacity development programme best practice in the South African petroleum industry. In addition, data analysis was explained thorough descriptions, inferential statistics, charts, and frequencies. Therefore, according to Creswell (2011: 69-70), data are processed through four basic mixed methods designs that comprise the convergent parallel design, the explanatory sequential design, the exploratory sequential design, and the embedded design. The convergent parallel design framework was implemented in this study for purposes of reflecting the process of interaction, priority, timing, and mixing data (Creswell, 2011: 69-70).

In addition, the purpose of this convergent design consisted of understanding or developing a more complete comprehension of the research problem by obtaining different but complementary data for validation purposes. Therefore, quantitative data collection and analysis, and qualitative data collection and analysis were processed, compared, and interpreted using the framework of mixed methods design for data analysis. The framework for mixed methods design, comprising the convergent parallel design that includes both quantitative and qualitative research techniques is indicated in Figure 5.3, which involves descriptions, relationships, comparisons and interpretation or predictions of both quantitative and qualitative results.

Figure 5.3: Triangulation design- Mixed methods designs implemented for data collection and analysis

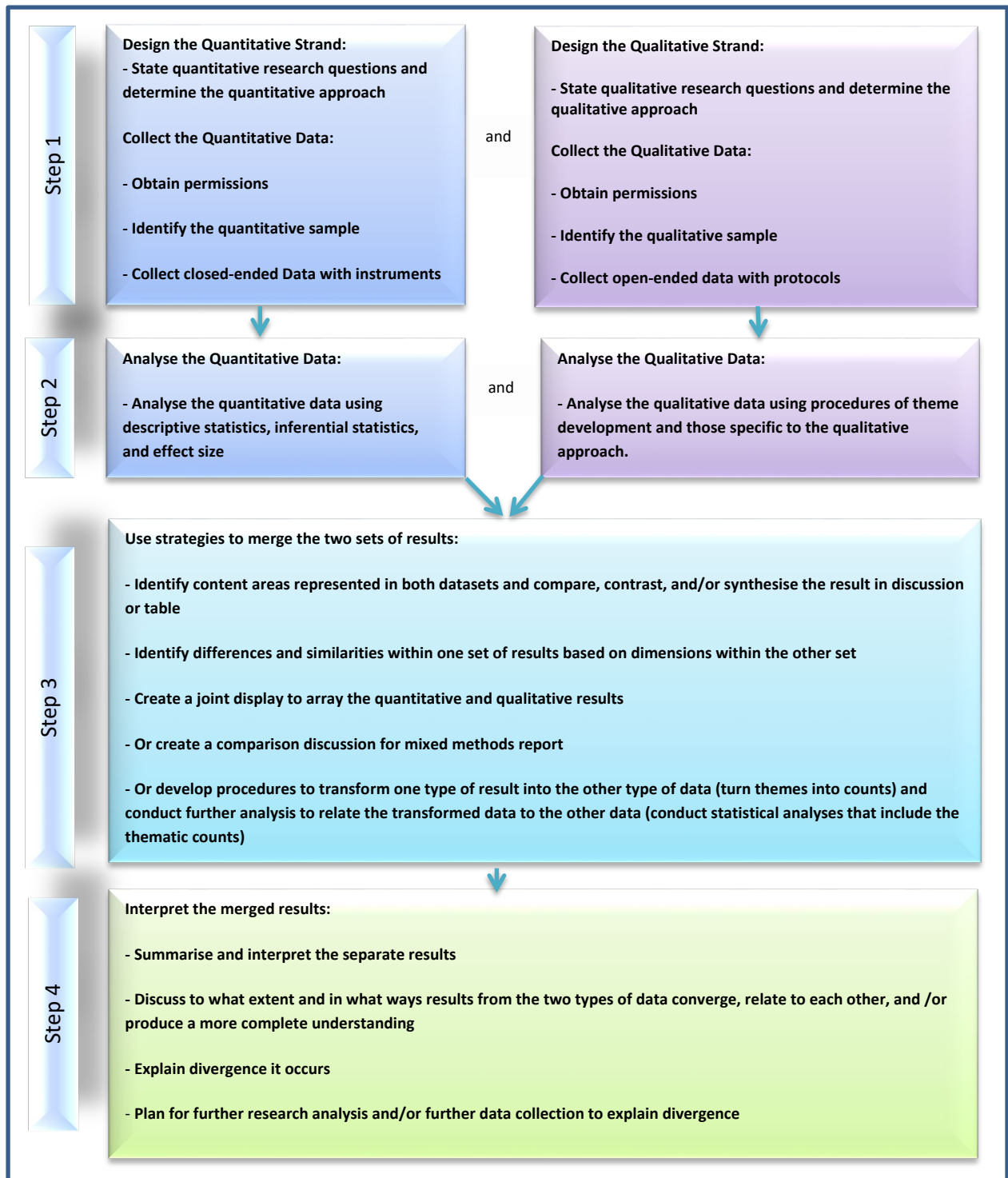


Source: Adapted from Creswell (2011: 69): Designing and conducting mixed methods research

Figure 5.3 illuminates the mixed approaches implemented to identify the problem, determine the research questions, collect data, analyse data, and interpret results. Elements of both quantitative and qualitative research are processed through the converged parallel design framework of mixed methods. Creswell (2018: 70) provided a flowchart of the basic procedures in implementing a convergent mixed methods

design. Figure 5.4 illustrates the procedures undertaken in applying a convergent mixed methods design in this study.

Figure 5.4: Procedures implemented for convergent mixed methods design



Source: Adapted from Creswell (2018: 70)

Figure 5.4 illustrates the procedures in implementing a convergent mixed methods design, which involves merging or bringing together the quantitative results with the qualitative results. The comparison of results from this study was done through a table in which results are included from both the quantitative and qualitative data. According to Creswell (2018: 71 – 72), using the convergent design in this study presents several strengths and advantages, which include the following:

- The convergent design makes intuitive sense;
- It is an efficient design in which both types of data are collected during one phase of the research at roughly the same time;
- Each type of data can be collected and analysed separately and independently, using the techniques traditionally associated with each. This lends itself to team research in which the team can include individuals with both quantitative and qualitative expertise; and
- The convergent design facilitates the direct composition of participants' perspectives gathered in an open-ended questioning format (semi-structured interview) with the perspectives drawn from the researcher's standpoint (an instrument such as the survey chosen by the researcher) in close-ended questioning. Thus, the convergent design enables the researcher to give voice to participants, as well as report statistical trends.

5.11.1 Descriptive analysis

According to Creswell (2018: 214), quantitative data analysis was conducted using PLS statistical software and proceeded from descriptive analysis to inferential analysis, during which multiple steps built a more refined analysis. Therefore, in this study, the choice of the PLS statistical test was based on the type of research questions asked; the number of variables in the questions; the type of scales used to measure those variables; and the variables' scores, which indicated whether they are normally or non-normally distributed. Moreover, data collected from the questionnaire and/or responses were analysed using the PLS-SEM software. Chapter Six indicates

the descriptive statistics in the form of frequency graphs, cross-tabulations, and figures. Descriptive analysis was used in this study to characterise the nature of the indicators present in the data. Therefore, the key characteristics of the sample, such as age, gender, qualifications, and experience are presented in tabular form. The Likert Scale responses in different sections were summarised following the variables that included strongly disagree, disagree, neutral, agree and strongly agree, which are given in tabular form. Cross-tabulations included the degree to which the biographical characteristics of respondents influenced their responses on the various sections of the questionnaire.

5.11.2 Inferential analysis

According to Creswell (2018: 215), the next step after the analysis process is to present the results of the analysis in summary from following statements, tables and graphs/figures. Inferential analysis is normally used to test hypotheses. Given the exploratory and convergent nature of this study, no testable hypotheses were articulated. However, inferential tests were performed with relevance to tests from the statistical significance of the descriptive results. These included correlations and chi-square testing, which were interpreted using the p-values. The chi-square test was used in this study to determine if the difference in the scoring patterns per statement was significant.

Furthermore, the traditional approach to reporting a result requires a statement of statistical significance (Creswell, 2018: 215). A p-value was therefore generated from the test statistic, in which a significant result was indicated with " $p < 0.05$ ". Bivariate correlation was also performed on the nominal and ordinal data. Positive values indicated a directly proportional relationship between the variables and a negative value indicates an inverse relationship. However, tables (in quantitative research) can report the results related to descriptive questions or inferential questions (Creswell, 2018: 215). Qualitative research (data analysis) procedures involved selecting the analysis approach based on the research questions (Creswell, 2018: 211). In the method of gathering and analysing qualitative data, this study used the Nvivo software package (12 Pro) for qualitative data analysis programme.

5.11.3 Representation and Interpretation of results

The following sections outline the process of the representation and interpretation of the results.

5.11.3.1 Representing quantitative and qualitative data analysis

The representation of quantitative and qualitative data analysis is a process that needs to be understood. In this study, representing data analysis in quantitative data involved summarising statistical results (statistics and p-values) in text, tables, and graphs/figures. Furthermore, qualitative data analysis included representing the findings in discussions of descriptions, themes, or categories; providing evidence for themes/description, such as quotes, multiple prescriptive and rich description; and presenting visual models, figures and/or tables about the descriptions or themes (Creswell, 2018: 211, 215).

5.11.3.2 Interpretation of quantitative and qualitative data analyses

According to Creswell (2018: 211, 215), the interpretation of quantitative and qualitative data analyses must be done through an understandable process. In this study, the interpretation of the quantitative data analysis involved summarising the major quantitative results; comparing the results in terms of the research questions; examining results concerning prior predictions or explanations drawn from the literature; identifying the limitations of the study; and identifying the implications for future research and audiences. Moreover, the interpretation of the qualitative data analysis included summarising the major qualitative findings; interpreting how the findings answered the research questions; relating findings to past literature and/or theories; bringing in a personal assessment of the meaning of the findings; identifying limitations of the study; and identifying implications for future research and for audiences (Creswell, 2018: 211, 215).

5.11.3.3 Linking integrative data analysis and interpretation in a mixed methods design

According to Creswell (2018: 221), the intent of integration in convergent design data analysis and interpretation in mixed methods is to develop results and interpretations that expand understanding, which is comprehensive, validated and confirmed. Therefore, in this study, the integrated design data analysis and interpretation within the mixed methods design is illustrated in Table 5.4.

Table 5.4 Procedure applied for the integration and interpretation of data analysis in a mixed-methods design

Type of core design	Intent of integration	Data analysis integration procedures	Representation of the integration results	Interpretation of integration results
Convergent Design	- Use simultaneous integration or merging to develop integrated results and interpretations that expand understanding, to provide comprehensive results, and/or validate and confirm results	- Obtain result by analysing quantitative and qualitative data - Look for common concepts across the results - Compare the quantitative and qualitative results for each concept - determine in what ways the results confirm, or expand each other - Interpret and resolve differences - Use different procedures for data transformation	- Develop side-by-side comparisons of quantitative and qualitative results (through a narrative or comparison joint display) - Transform quantitative or qualitative results and combine in one database	- Consider how the confirming, disconfirming, and expanded results provide insight into the problem being studied and answer the mixed methods research question

Source: Adapted from Creswell (2018: 222)

Table 5.4 illustrates data analysis integration and interpretation in a mixed-methods design procedure. According to Creswell (2018: 224), the common approach to the convergent design is to compare the separate results of the two databases. Furthermore, Creswell (2018: 224) indicated that the major procedure used in analysing data for a convergent design comparing the two databases consists of the following steps:

- Obtain results by comparing quantitatively analysing the quantitative data and qualitatively analysing the qualitative
- With the quantitative and qualitative results identified the researcher look for the common concepts across both sets of findings.
- Develop joint display tables or graphs that array the two results together so that a comparison can easily be made.
- Compare the results of the tables or graphs by concepts to determine in what ways they confirm, disconfirm, or expand on each other.
- If the results are disconfirming, engage in additional strategies to understand the disconfirming evidence.
- Advance interpretations of how the confirming, disconfirming and/or expanded evidence from the merged databases enhance an understanding of and provide insight into the research problem.

Thus, in light of the aforementioned converged design, the analysis from questionnaires and interviews illuminated how capacity development programmes in the petroleum industry can improve employees' abilities/skills, increase productivity, enhance performance, create opportunities for creativity and innovation, and produce more competitiveness. Furthermore, the convergent design allowed the integration and analysis of quantitative and qualitative results in indicating the significance of capacity development programmes for socio-economic transformation process in South Africa.

5.12 Validity, reliability and triangulation

According to Hansen (2005), validity, reliability and triangulation are the three fundamental constructs that assist the researcher to achieve rigour within research. In this section, triangulation will not be examined because it was discussed earlier in Section 5.5. However, the meaning and benefits of applying a triangulation approach

in this study were clearly demonstrated by Noble (2019), Heale (2013) and Nelij (2010). For example, the triangulation approach was described as the practice of applying multiple approaches or multiple sources of data to analysing data in enhancing the credibility of a research study. Therefore, in this section, only validity and reliability are discussed.

5.12.1 Validity

According to Creswell (2018: 216) and Kumar (2011: 166), validity differs in quantitative and qualitative research but in both approaches, validity serves the purpose of verifying or checking the quality of the data, the results and the researcher's interpretation of the data. Therefore, validity is about inquiring whether selected data-gathering procedures achieved what they should achieve (Hansen, 2005). Validity also refers to the degree to which data provides relevant information about the research situation being explored. In addition, validity demonstrates the ability of an instrument to measure what it is supposed to measure (Kumar, 2011: 166).

Therefore, quantitative validity refers to the scores received from participants, which are meaningful indicators of the constructs being measured; while qualitative validity comes from standards based on researchers, participants, and reviewers. However, validity in mixed methods designs is defined as employing strategies that address potential threats to drawing correct inferences and accurate assessments from the integrated data (Creswell, 2018: 251). In this study, the research design, validity threats and strategies to minimise threats were related to the convergent design. Table 5.5 illustrates the validity threats and strategies that help to minimise these threats.

Table 5.5 Validity threats and types of mixed methods designs

Type of design	Validity threats	Strategies to minimise threats
Convergent Design	- Not using parallel concepts in data collection for both the quantitative and qualitative databases - Having unequal quantitative and qualitative sample sizes - Keeping results from the different databases separate - Failing to resolve disconfirming results	- Create partial questions addressing the same concept - Use the same sample sizes for quantitative and qualitative strands if comparing data for each participant or acknowledge different intents of sample size - Use convergent data analysis integration strategy - Engage in strategies to understand disconfirming results.

Source: Adapted from Creswell (2018: 251)

Table 5.5 illustrates the type of mixed methods design relating to potential validity threats and the strategies to minimise those threats. However, threats are related to the types of questions; the sampling procedures of the quantitative and qualitative strands; the use of results from one sample to the other; and the rigorous procedures used at different phases. Therefore, according to de Vaus (2014: 95), a valid question is one that measures what people think it does by referring to the question: "How valid is it?" For example, one of the interview's research questions was: What kinds of skills training programmes are provided for workers' and managers' skills development in the petroleum industry?

In addition, how often are skills training programmes offered to workers and managers in your company? In quantitative research, the investigation aimed to ascertain how capacity development programmes in the petroleum industry could improve employees' skills development and increase opportunities for social change. Statements like "skills development in the petroleum industry or the role of capacity development programmes for petroleum industry development and socio-economic transformation" were suggested to respondents to get their views or perceptions. Thus, in this study, the researcher ensured that procedures were properly and correctly used to get relevant information from valid questions related to the phenomenon under study. The phenomenon under study was linked to the real need for skills training programmes in the workplace towards tackling the critical issue of

skills shortages affecting the development of the South African petroleum industry. The researcher ensured that quality, rigour, and trustworthiness were observed during the process of data interpretation.

5.12.2 Reliability

Myers (2017: 52) and Kumar (2011: 167) stated that reliability refers to consistency and stability in an instrument. The greater the degree of consistency and stability in an instrument, the greater will be its reliability. Creswell (2018: 217) stated that quantitative reliability refers to the scores received from participants, which are consistent and stable over time, while in qualitative research, there is more focus on validity than reliability. Therefore, reliability involves the data compilation procedure, which ensures consistency of results. According to Hansen (2005), reliability refers to the degree to which data is truthful and the extent to which results are replicable. Therefore, it can be understood that reliability is the extent to which a data collection procedure and analysis yield the same answer for multiple participants in the research process. Therefore, to ensure reliability, the question should be answered in the same way on different occasions if given to the same person (assuming that the person's position has not changed in the meantime). The question: "How reliable is it?" aligned the researcher with the accuracy of the data gathered.

Accordingly, it was considered that a question that fails to achieve consistent responses is unreliable or ambiguous, and vague question wording may produce unreliable responses as respondents read the question differently on different occasions (de Vaus 2014: 95). In this study, the researcher established the reliability and constructed the validity of scores by selecting quality instruments and by analysing data. For both validity and reliability, the Cronbach Alpha test using similar standardised questionnaires was also used to strengthen the study's validity and reliability. According to Mohsen (2011: 53-54), the Cronbach Alpha test can be used to test a questionnaire's reliability, accuracy, and internal consistency. To enhance the accuracy of the information, the researcher ensured that respondents had sufficient time and were not forced or intimidated during the completion of questionnaires or interviews. Additionally, the expertise of a professional statistician was employed as a means to underpinning the reliability and credibility of this study.

5.13 Delimitation and Limitation

Delimitations and limitations for this study are explained in the sub-sections that follow.

5.13.1 Delimitation

According to Zvitambo (2017: 177), delimitation refers to the process whereby the researcher outlines the boundaries of the research, the factors, constructs and/or variables. In this study, the main purpose was to explore capacity development programmes for socio-economic transformation in South Africa. The study used the case of the South African petroleum industry, focussing on SAPIA, CHIETA and the Government's Department of Energy and Engen refinery, highlighting the skills development of employees in the South African petroleum industry. Therefore, in using the PESTIE framework, only the political, economic, and social variables were examined. In addition, four petroleum organisations that are members of SAPIA were involved in this study. Furthermore, this study included qualified respondents, having a minimum of Matric to postgraduate degrees.

Therefore, it might be realistic to assert with certainty that the findings of this study can be generalised to the entire South African petroleum industry. Justification of this declaration is made based on the critical issues of technical skills shortages, skills waste and the deficiency of positive human capital capacity that affects not only the South African petroleum industry, but also many other public and private sector organisations of the national socio-economic environment. In addition, the claim of generalising the findings of this study to the entire South African petroleum industry, as well as to different other public and private sectors, is because capacity development programmes are expected to promote human capital capacity development in all sectors of the national economy. The best practice of skills training programmes in the workplace is required to be functional under the same condition and under collective policies guidance in the entire South African petroleum industry.

5.13.2 Limitations

Zvitambo (2017: 178) stated that limitations refer to the potential problems or weaknesses that the researcher encountered during the study. Limitations also refer to restrictions in the study which cannot be controlled and may be limited due to narrow segments of the total population that one wishes to study or may be limited to the research method one has selected to use (Pietersen & Maree, 2007:165). This study specifically focussed on selected organisations that are amongst the key players of the South African petroleum industry and which are playing a significant role in terms of human capital capacity development. Only managers and qualified staff members were selected as respondents to provide the quality and accurate information needed for this study.

However, an important cost was incurred in terms of transport and accommodation because the research combined two provinces, including Kwa-Zulu Natal and Gauteng. Time was very wide and elastic due to COVID-19, which affected the projected duration of the data collection process. Costs relating to transport and accommodation in Johannesburg and internet data were amongst the challenges that the researcher experienced during the data collection process. Working at home under COVID-19 measures of lockdown restrictions and at the same time, taking care of the family with very limited resources was a very testing experience.

5.14 Confidentiality and anonymity

Confidentiality and anonymity are terms frequently used in research on human subjects. According to Simpson and Cherouvis (2015), confidentiality is an agreement between parties made via the consent process. Confidentiality implies that the treatment of information (data) must be disclosed in a trust relationship and with the expectation that data will not be divulged without permission from participants. The researcher therefore kept the subjects' contributions to the research confidential. Moreover, anonymity refers to the fact that no identifiers (e.g. name, address, telephone number) are collected that link information/records/samples to the individuals from whom they were obtained; whilst privacy refers to an individual's control over the extent, timing and circumstances of sharing him/herself (physically,

behaviourally, or intellectually) with others (Simpson and Cherouvis, 2015). Furthermore, the researcher safeguarded subjects' privacy during the study process and during the data collection process. In the interest of confidentiality and anonymity, data must be processed and stored securely in a form that prevents, where possible, the identification of individuals. Thus, for this study, the names of participants that were available to participate in the research study process have been kept confidential and anonymous. Information and data collected will remain saved and reserved during the progression of the study and will be destroyed 5 years after research completion.

5.15 Ethical considerations

Research ethics refers to the consideration of the participants' welfare during the process of collecting data and in the final report (Zvitambo, 2017: 179). This study aligned with the ethical requirements of the Durban University of Technology (DUT), which emphasised protecting participants from any kind of risks. Therefore, the researcher was aware of not involving any questions, stimuli, tasks, investigations, or procedures that may be experienced by participants as stressful, anxiety producing, noxious, aversive, or unpleasant during or after the research procedures. For example, according to the Durban University of Technology's Research Ethics, Policy and Guidelines (2016), in preventing participants from harm or risks during and after the research procedures, the researcher was aware of the following:

- The researcher should protect participants by not asking them to perform any acts or make statements which might be expected to cause discomfort, compromise them, diminish self-esteem or cause them to experience embarrassment or regret;
- The aspects of the study should not reasonably be expected to place participants at risk of criminal or civil liability; and
- No aspects of the study should reasonably be expected to place participants at risk of damage to their financial standing or social standing or employability, etc.

Thus, in this study, the researcher observed the aforementioned ethical considerations and opted for moral criteria that ensured that participants and interviewees felt comfortable. In addition, the ethical considerations included aspects that consisted of respecting participants, not harming them, being in good attire during data collection and being friendly and polite to participants. Efforts were made to protect the privacy of respondents by not releasing their names and not exposing their personal feelings, thoughts and experiences.

5.16 Conclusion

This chapter discussed the research approach/methods, data collection and analysis procedures, reliability and validity, triangulation, delimitation, and limitation of the study. These aspects were examined with care during the process of this study. The case study design consisted of exploring capacity development programmes for socio-economic transformation in South Africa. The focus involved the investigation of situations causing skills shortages in the South African petroleum industry. Detailed justifications for the mixed methods approach and convergent design were clarified in this chapter. The choice of respondents/participants and sampling approach implemented in this study were illuminated in relation to the aim and objectives of the study. In addition, this chapter discussed the instruments used to collect data, which included a questionnaire distribution and one-on-one interviews.

Confidentiality, anonymity, and ethical issues related to the research, such as the approval letter to conduct the research, participant informed consent and accessibility of the research findings, were clearly disclosed in this chapter. Thus, the research model aligned to the conceptual framework (Fig 1.1) and the research process that led to the development of the CDP-PUSH-Effects framework (Fig 5.1) were effectively applied in this study to suggest ways for closing the gaps of technical skills shortages, skills waste, and the deficit of positive human capital capacity in the South African petroleum industry/society. The results from this study indicate the efficient and best practice of the methodology framework (Fig 5.3).

CHAPTER 6

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

6.1 Introduction

The aim of this study was to explore capacity development programmes for socio-economic transformation in South Africa through the case study of the South African petroleum industry. This chapter presents the experimental results and methods used to calculate and interpret data in relation to the research objectives. It starts with a summary of the theories where factors were taken to build the study's model and thereafter, it discusses the research instrument, data collection procedures, descriptive statistics, empirical findings, results of the measurements and structural model, the mixing of quantitative and qualitative results and concluding remarks of the study's findings.

The Partial Least Squares path modelling (PLS)-also known as PLS Structural Equation Modelling (PLS-SEM)- was applied in this study as a variance-based structural equation modelling technique that relies on the partial least squares algorithm (Pirouz, 2006: 2-4). The PLS-SEM is an alternative tool to AMOS and LISTREAL, but more advanced than SPSS. According to Pirouz (2006: 2-4) and Kodua (2019), the PLS-SEM technique was developed by O.A. Wold.

6.2 Measurement items of Questionnaire

The questions were developed with five factors measured by multiple item scales. These were combined from various sources, including social science and public administration literature, which were amended and adapted for the current exercise. The pilot study validated the appropriateness of these adopted factors and ensured that they are applicable. Issues on wordings, uniformity of format, style and texts were some of the matters that came up for correction. The biographical section had six questions, while the rest were based on the objectives of the study. Subjects were asked to rate the second part using the 5-point Likert scale ratings already mentioned. Table 6.1 indicates the summary of derived constructs.

Table 6.1: Summary of derived constructs

Objective	Factors	Theory (Source)
1	Factors that contribute to socio-economic transformation in South Africa	
	1.1 Government policies improvement and best practice;	Mosala (2017: 330-332)
	1.2 Private sector development: Petroleum industry contribution to socio-economic transformation;	Gumede (2014: 2-6) Ndalamba (2019: 38 -40) Oberholzer (2020)
	1.3 Economic growth and development as a key factor to socio-economic transformation;	SAPIA Report (2017) Anyanwu (2014: 469-472) Sablonnière (2017)
	1.4 Social change/transformation;	Gobodo (2008: 1-10) UNDP Report (2009: 13-19)
2	1.5 Capacity development programmes model best practice or usage for petroleum industry development and socio-economic transformation.	
	Identifying the nature of capacity development programmes in the South African petroleum industry	
	2.1 The nature of capacity development in the public environment (Government);	CHIETA Report (2014: 34-52)
	2.2 The nature of capacity development in the economic environment;	PSETA Report (2016: 47-61) Vallejo (2016: 2-6)
	2.3 The nature of capacity development in the social environment;	UNDP Report (2009: 22-27) UNEP Report (2017: 10-12)
3	2.4 The nature of capacity development in the petroleum industry.	Bhasi (2014: 32-34)
	Investigating on how capacity development programmes can contribute to socio-economic transformation in South Africa	
	3.1 Capacity development programmes contribution to public environment for socio-economic transformation;	UNDP Report (2011: 1-4)
	3.2 Capacity development programmes contribution to private environment for socio-economic transformation;	Noya (2009: 2-8) African Development Bank Group Report (2013: 31-42)
	3.3 Capacity development programmes contribution to economic environment for socio-economic transformation;	African Development Bank Group Report (2013: 30-39) Noya (2009: 5-8)
	3.4 Capacity development programmes contribution to social environment for socio-economic transformation;	Mosala (2017: 330-332)

4	transformation in South Africa.	
	Investigating the extent to which capacity development programmes focussing on skills development has contributed to petroleum industry and socio-economic transformation in South Africa	
	4.1 The extent to which capacity development has to the public environment for petroleum industry and socio- economic transformation; 4.2 The extent to which capacity development has contributed to the private environment for petroleum industry and socio-economic transformation; 4.3 The extent to which capacity development has contributed to the economic environment for petroleum industry and socio-economic transformation; 4.4 The extent to which capacity development has contributed to the social environment for petroleum industry development and socio-economic transformation.	Hammond (2011: 10) Department of Higher Education and Training Annual Report (2016/2017: 16), (Bloch, 2000) Machika (2014: 4), The OECD (2015: 5) Viljoen (2016), (Manuel, 2011: 90). Smit (2016: 68) and Smit (2011: 79)
5	Identifying the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry	
	5.1 Challenges/barriers affecting the best practice of capacity development programmes in the public environment; 5.2 Challenges/barriers affecting the best practice of capacity programmes in the petroleum industry; 5.3 Challenges/barriers affecting the best practice of capacity development programmes in the economic environment; 5.4 Challenges/barriers affecting the best practice of capacity development programmes in the social environment; 5.5 Challenges/barriers affecting the best practice of capacity development programmes in the petroleum industry.	Williams (2016: 47) and Smit (2016: 59, 71) United Way of Calgary and Area Report, 2011: 11). Smit (2011: 79) United Way of Calgary and Area Report (2011: 12), Smit (2016: 68) Smit (2016: 68) and Smit (2011: 79)
	Exploring the international models of capacity development programmes that promote human capital capacity development, petroleum industry development and socio-economic transformation	
6		

7	6.1 Capacity development programmes models' effects on the public environment for petroleum industry development and socio-economic transformation;	UNEP (2017: 5), Peek (2008: 3), Corkin (2017: 3) Peek (2008: 3), Kim (2013) Carneiro (2015: 12), (Kim, 2013), Bester (2015: 2) Kim (2013), Rothman (2012: 1-2) Ovadia (2016), Peek (2008: 51)
	6.2 Capacity development programmes models' effects on the private environment for petroleum industry development and socio-economic transformation;	
	6.3. Capacity development programmes models' effects on the economic environment for petroleum industry development and socio-economic transformation;	
	6.4 Capacity development programmes models' effects on the social environment for petroleum industry development and socio-economic transformation;	
	6.5 Models of capacity development programmes that promote human factor development, petroleum industry development and socio-economic transformation.	
	Developing an appropriate capacity development-best practice model aligned to human capacity development for the South African petroleum industry development and socio-economic transformation	
	7.1 Government benefits from potential CDP-PUSH-Effects framework usage in the petroleum industry;	OECD (2015: 5), Viljoen (2016) The OECD (2015: 5), (Manuel, 2011: 90), Zino (2014: 4) Rodrik (2007: 2), Manuel (2011: 365) International Labour Organisation (2010: 34),011: 90), Smit (2016: 58) HRD-SA, 2010 – 2030 (2009: 9-10), Folsher (2006: 1), Erasmus (2018)
	7.2 Benefits from the proposed CDP-PUSH-Effects model usage in the petroleum industry;	
	7.3 Socio-economic benefits from the proposed CDP-PUSH-Effects model usage in the petroleum industry;	
	7.4 Social benefits from potential CDP-PUSH-Effects framework usage in the petroleum industry;	
	7.5 CDP-PUSH-Effects framework impacts for the petroleum industry development and socio-economic transformation in South Africa.	

Source: Self-generated by the researcher

Table 6.1 refers to the objectives and factors derived from theories that were explored, examined, and discussed in this study. Whilst the researcher designed the table, the ideas were based upon that which was discovered when consulting the sources listed in the last column of Table 6.1.

6.2.1 The research instrument and response rate

The model's factors and items were taken from already established studies as shown from Table 6.1. These were then personalised to address the aim and objectives of the current study. The questionnaire was articulated to target respondents with the necessary knowledge about the study. The questionnaire asked a series of pre-conceptualised questions and gave a limited set of possible responses based on a 5-Point Likert Scale of (1) strongly disagree to (5) strongly agree to quantify the comparative importance of the factors. This was made up of eight (8) sections, namely: Section A- Biography and Section B to H- Objectives of the study.

The Biographical section sought to gather information about the respondents on issues such as gender, age category/group, level of education and training, occupation, years of working experience and race, while section B-H that consists of the seven (7) objectives of the study sought to capture factors that contribute to support capacity development programmes in the petroleum industry. Therefore, in relating the response rate to the quantitative study, a total of 388 participants was surveyed of which 292 responses were collected, representing 75.3%. However, in the qualitative study, a total of nine (9) interviews out of 12 were successfully conducted by the researcher, representing a 75% interviewee participation rate. Hence, through the convergence of the quantitative and qualitative results, the response rate represents 75, 675 %, while the response rate was considered at least 70%, acceptable for the study as a fair representation of the respondents/participants from the South African petroleum industry.

Accordingly, in quantitative as well as qualitative research, the questionnaire was respectively distributed/conducted to respondents by the researcher after approaching them with a consent letter and a statement of agreement for them to participate in the research study, informing them of the essence of the study. This was after the pilot study was conducted to correct anomalies and fine-tune them to perfection. The respondents were assured of confidentiality and anonymity, while they were free to fill the questionnaire at their own convenient time.

6.2.2 Subject/Respondents

The subjects for this study were obtained from four organisations' members of the South African Petroleum Industry Association (SAPIA), which are displayed in Table 5.2. Respondents were asked to complete the questionnaire carefully as their assistance (opinion, judgement, perception, skills and experience) could possibly/necessarily influence the outcome of this study. Respondents were also aware that their participation in this study could be beneficial in terms of suggestions and recommendations that will possibly contribute to petroleum industry development and socio-economic transformation in South Africa.

A letter explaining the essence of the survey was also sent to the subjects, in which their safety and confidentiality in completing the questionnaire were guaranteed. As already hinted, the mixing of quantitative and qualitative results yielded a total of 301 responses that were used for analysis respectively from both PLS-SEM and Nvivo techniques.

6.2.3 Biographical statistics

This section describes the biographical characteristics of respondents. Table 6.2 illustrates the overall biographical data.

Table 6.2: Biographical data

Variables	Characteristics	Number	Percentage (%)
Gender	Male	159	54
	Female	133	46
Age	Below 20	-	-
	Between 21 and 30	56	19
	Between 31 and 40	100	34
	Between 41 and 50	111	39
	Between 51 and 60	24	8
	Above 60	1	-
Highest Qualification	Lower than Matric	-	-

Post or occupation in the company/organisation	Matric	37	13
	Diploma	120	41
	University Degree	102	35
	Postgraduate Degree	31	10
	Post doctorate	2	1
Working Experience	Employee	225	77
	Manager	39	13
	Other, please specify:	29	10
	Less than 5 years	10	3
	5-10 years	166	57
Race group	10-15 years	72	25
	15-20 years	29	10
	More than 20 years	15	5
	African	236	81
	White	2	1
	Indian	45	15
	Coloured	9	3

Table 6.2 presents the expressive biographical data of the respondents who participated in the study. The findings point out that the overall ratio of males to females who participated in this research study was 54% and 46% respectively. The results demonstrate a leading participation of males by an 8% difference to females. This could justify and demonstrate a significant control of socio-economic activities by males, which reveals evidence of inequality between males and females in the workplace, whether in terms of participating in socio-economic activities or in terms of decision-making.

In this study, the characteristics of age category/group of respondents were ranging between below 20 and above 60 years. However, the results showed that the majority (39%) of respondents were in the between 41 and 50-age category and 34% of respondents were in the between 31 and 40 age-category. Regarding the highest level of education and training qualification, the results indicate that the majority of respondents (41%) had a diploma qualification. In addition, the rank of educational

levels is as follow: university degree (35%), matric (13%), Postgraduate degree (10%) and post doctorate (1%). This rank includes the trends of respondents from public and private operational organisations involved in the South African petroleum industry. Table 6.2 reveals useful statistics, postulating that a fair percentage of respondents have a higher qualification (Matric and above) and that the responses gathered emanated from qualified and well-informed sources.

In addition, the results illustrate respectively that 77% of respondents were employees, 13% managers and 10% other types of profession, including temporary chemical operators, acting supervisors and managers. Mostly, 57% of those employees or managers have working experience that varied between 5 to 10 years; 25% of them between 10 to 15 years; and 10% between 15 to 20 years. Thus, the years of respondents' working experience can also guarantee the quality of responses/information gathered in this study.

Finally, on race group, Table 6.2 shows that most respondents (81%) were Africans (black), 15% Indians, 3% coloured and 1% white. Without discrimination, the rate of African participation in this study can demonstrate progress in terms of achieving the objectives of Broad-Based Black Economic Empowerment (B-BBEE), which is the government's strategic initiative to promote socio-economic transformation towards ensuring meaningful participation by black people in the economy and business sector (Kruger, 2019: 470). Briefly, all those respondents were from four organisations, including SAPIA, CHIETA, Engen refinery and the government's Department of Energy (petroleum sub-sector). As the gatekeeper letters (Appendix B) can display, Training Officers and Skills Development specialists assisted the researcher in the process of Data collection.

6.2.4 Data normality

Inspection of how data distribution can influence the outcome of this study was carried out with the PLS-SEM analytical software indicator analysis. The standard deviations (Std Dev), data means and Manifest Variables (MV), excess kurtosis and skewness are shown in Table 6.3 (Appendix D). When data distribution is not normal, it can ensemble suspicions on the outcome of a test. However, it should be borne in mind that normal likelihood only works well under "practical" non-normality (Boomsma *et al.* 2001: 14). The chosen software for the current exercise, the PLS-SEM covariance

analysis, can achieve complete assessment whether the data is normally distributed or not (Gefen, Straub and Boudreau, 2000; Henseler, Hubona and Ray 2016). Hence, there should be no doubt whatsoever about the outcome of this study. Per the requirement for this investigation, kurtosis and skewness are necessary to fall within the range ± 1.0 (Lomax and Schumacker, 2004). The data under scrutiny meet this requirement and the recommended ratio of 1:15 for a sample size of ± 200 clears this study from any doubt once more. Table 6.3 (Appendix D) postulates the MV data descriptive. To make things easier or understandable, technical appellations were used as acronyms to simplify the computerised analysis. Therefore, the description and understanding of these acronyms includes the following:

- **QUALIF**= qualification;
- **CURRENT OCC**= Current occupation;
- **YEAR OF WORK EXP** = year of work experience;
- **ContFac (objective 1)** = contributory factors;
- **NCDvT (objective 2)** = nature of capacity development;
- **CDPC (objective 3)** = capacity development programmes contribution;
- **SCDP (objective 4)** = skills capacity development programmes;
- **CCDP (objective 5)** = challenges/barrier affecting capacity development programmes;
- **IMCD (objective 6)** = international models of capacity development,
- **ACDM (objective 7)** = appropriate capacity development model;
- **QNR**= Quantitative Results;
- **QLR**= Qualitative Results;
- **R1 to R9= Respondent.**

Table 6.3: MV Data Descriptive

Table 6.3 (Appendix D) displays the statistical results of variables from the survey. Results are given following the predisposition including Mean, Median, Minimum, Maximum, Standard Deviation, Excess Kurtosis and Skewness. Therefore, the statistical values from standard deviation, which are also presented in Figure 6.1 (structural model) as outcomes of the analysis, are discussed and interpreted in tandem with each objective of the study. These are the reflection of response values attesting respondents' levels of agreement or disagreement based on the statements suggested to the respondents/participants.

6.2.5 Exploratory factor analysis (EFA)

The questionnaire for the study is a data-driven one of 122 indicators/variables with specifications of common factors from the PESTIE model (Smit, 2011: 64), involving political, economic, and social factors which reflect the pattern of relationships between the common factors and the indicators. Hence, an EFA was deployed as an exploratory or descriptive data technique to determine the appropriate number of common factors and to ascertain measured variables, which are reasonable indicators of the various latent dimensions under consideration. The outcome of the EFA is presented in Table 6.4 (Appendix E). Table 6.4 presents the outcome of the exploratory factor as it can be seen, some of the indicators did not load well from ContFac co-varied with ACDM.

This postulates that besides the factors that were examined to contribute to petroleum industry development and socio-economic transformation in South Africa, another round of experiments will be necessary to determine the additional factors that may certainly contribute to petroleum industry development and socio-economic transformation in South Africa. The confirmatory factor analysis (CFA) loaded as it is displayed in Table 6.5. Objectives in Table 6.5 are presented and ordered following the high-level responses scored by the participants in terms of agreement and disagreement. For example, respondents have shown much interest and consideration in objectives 7, 5 and 3, as the statistical outcome can demonstrate. However, the levels of agreement from objectives 1, 6, 2 and 4 were also considerable, given that they are in most cases above the levels of disagreement.

Table 6.5: Outcome of the CFA

	ACDM Objective 7	CCDP Objective 5	CDPC_ Objective 3	ContFac_ Objective 1	IMCD Objective 6	NCDevT Objective 2	SCDP_ Objective 4
ACDM2.1	0.737						
ACDM2.2	0.811						
ACDM4.1	0.794						
ACDM4.3	0.806						
CCDP2.2		0.917					
CCDP2.3		0.921					
CCDP4.1		0.782					
CDPC5.2			1.000				
ContFac1.2				0.776			
ContFac1.3				0.786			
ContFac4.2				0.842			
ContFac5.2				0.776			
IMCD1.2					0.723		
IMCD2.2					0.714		
IMCD2.3					0.724		
IMCD3.1					0.792		
IMCD3.2					0.864		
IMCD4.1					0.841		
IMCD4.2					0.782		
IMCD4.3					0.785		
IMCD5.1					0.820		
IMCD5.2					0.760		
NCDevT3.5						0.889	
NCDevT4.2						0.881	
SCDP4.1							0.848
SCDP4.2							0.936
Composite reliability	0.810	0.864	1.000	0.811	0.946	0.724	0.843

Cronbach's alpha	0.789	0.846	1.000	0.807	0.930	0.724	0.755

Source: Self-generated by the researcher

The outcome of the CFA test attests that the questionnaire's reliability and validity indicators loads perfectly onto a single-item scale. The results in Table 6.5 affirm that these indicators are the only and exact factors, which satisfy the widely accepted criteria for reliability and validity tests (Henseler et al., 2016). Hence, the internal consistency and composite reliability (CR) of this study is accepted. The internal consistency was affirmed by Cronbach's alpha (α) (Cronbach 1951), while CR estimation to show the correlations between items and factors followed proposals (Henseler et al., 2016).

Following the last two rows of Table 6.5, which shows all values of composite reliability and Cronbach's alpha to be above 0.70, this study's questionnaire can be confidently said to be reliable (Fornell and Larcker 1981; Henseler et al. 2016; Bagozzi and Yi, 2012) after cancelling ninety-six (96) redundant ones to remain with the above twenty-six (26) factors. Next, the test of discriminant validity to decide the amount of variance that the study's factors were able to capture from the questionnaire items (Henseler et al. 2016) was performed. This was done to compare the Average Variance Extracted (AVE) with the correlated squared root (Fornell and Larcker, 1981). For this test to be satisfactory, the AVE (Table 6.6) of a factor must be greater than the square root of the inter-factor correlations (Fornell and Larcker, 1981).

Table 6.6: Fornell-Larcker Criterion

	ACDM Objective7	CCDP Objective5	CDPC_ Objective3	ContFac_ Objective1	IMCD Objective6	NCDev Objective2	SCDP_ Objective4
ACDM	0.788						
CCDP	0.393	0.876					
CDPC_	0.498	0.235	1.000				
ContFac_	0.483	0.464	0.599	0.795			
IMCD	0.682	0.206	0.558	0.465	0.782		
NCDev	0.506	0.201	0.635	0.545	0.638	0.885	
SCDP_	0.061	-0.219	0.324	0.117	0.375	0.243	0.893

Source: Self-generated by the researcher

Table 6.6, describes the AVE values and the correlations amongst factors (square roots in diagonal heights), which surpasses the inter-factor correlations. Consequently, the discriminate validity, which shows the extent to which one factor in this study is now truly different from other factors (Suki 2011), is met. This study therefore concludes that the final measurement scales, which are going to be discussed in the next sections, really have sufficient validity and demonstrate high reliability (Henseler et al., 2016).

6.3 Structural Model

After an assessment of the measurement model, the PLS-SEM requires that reporting on the structural model be carried out. Therefore, Figure 6.1 illustrates the structural model linked to variables analysis. Per this study, this was done in terms of seven (7) objectives. The variance (R^2) of each objective or factor indicates the efficacy of the study's fit to the data and shows the amount of discrepancy in any of the objective factors that is explained by the model.

Figure 6.1 Structural model

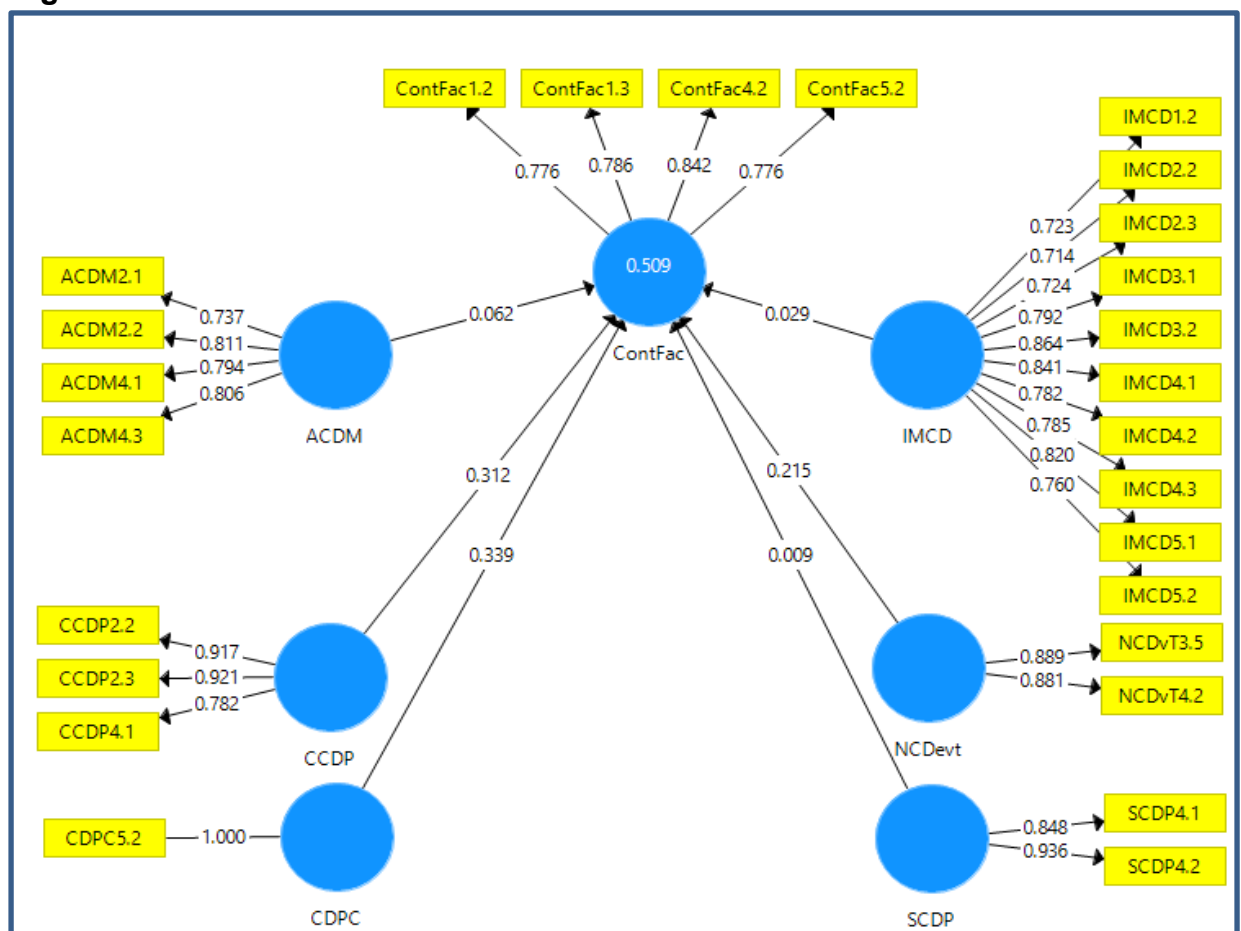


Figure 6.1 postulates that the values on the arrows are the beta values (b). For this study, the CDPC is ($b=0.339$) as the variant explaining the dependent variable. These values are discussed under sections related to each objective of the study further below. Table 6.7 summarises the result of objectives testing in order of significance.

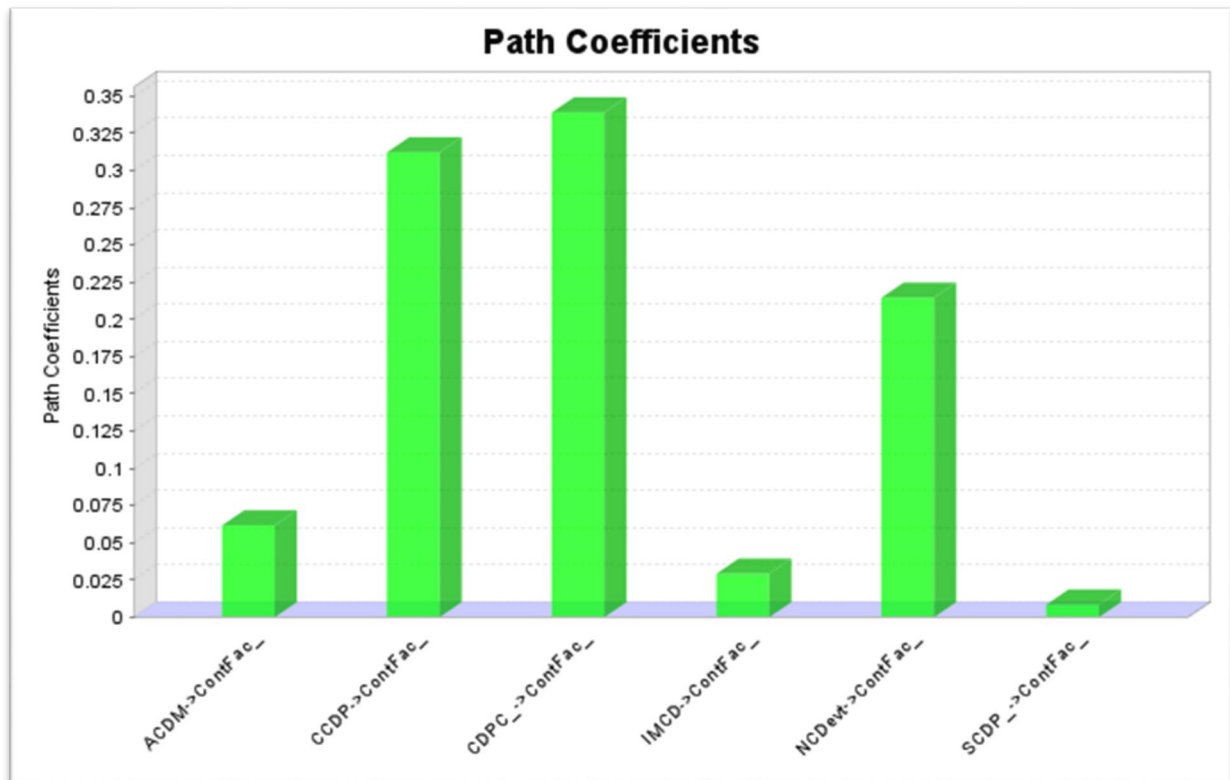
Table 6.7: Summary of the result of objectives testing in order of significance

Effect	Cause	Estimate (β)	P-value	Objectives (O)
ContFac	CDPC	0.339	0.000***	O3 strongly supported
ContFac	CCDP	0.312	0.000***	O5 strongly supported
ContFac	NCDevT	0.215	0.001***	O2 strongly supported
ContFac	ACDM	0.062	0.376 ^{ns}	O7 lightly supported
ContFac	IMCD	0.029	0.701 ^{ns}	O6 lightly supported
ContFac	SCDP	0.009	0.877 ^{ns}	O4 lightly supported

Note: SE (standard error), ns (not significant), * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (one-tailed tests)

Table 6.7 indicates the result of objectives testing in order of significance and Figure 6.2 symbolises the charting outcome of the objectives testing, which are discussed under objectives testing.

Figure 6.2: Complete chart of Path coefficients



From Figure 6.2, it can be observed that result of objectives testing in order of significance demonstrates a strong correlation between CDPC-ConfFac (β 0.339 and P-value 0.000***). This implies that objective3 (CDPC: Investigating how capacity development programmes can contribute to socio-economic transformation in South Africa) was the most supported objective from others by the respondents (CDPC5.2: 100%). Respondents have indicated that capacity development programmes could be the engine of socio-economic transformation in supporting skills training programmes that promote integrity, accountability, trustworthiness, honesty, empathy, loyalty, solidarity etc. in South Africa.

In other words, capacity development programmes best-practice in the petroleum industry could influence the development of positive human capital capacity and contribute to (public and private organisations' development) socio-economic transformation in the country. Next, there was a strong correlation between CCDP-ConfFac (β 0.312 and P-value 0.000***). This suggests that objective5 (identifying the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry) correlated perfectly with

objective1. This objective was the second-most supported (CCDP= 87.6% responses), which suggests that respondents have shown their concern about the challenges affecting the best practice of capacity development programmes in the South African petroleum industry. For example, CCDP2.2 indicated that the South African petroleum industry is not fully or sufficiently addressing and supporting capacity development programmes as a tool that can promote technical skills as well as other scarce skills development in the workplace. More details and descriptions about other objectives are discussed under objectives testing.

6.4 Effect size (f Square)

Table 6.9 shows the sound effects of the objectives' factors on ContFac, which is calculated by the R^2 values for ContFac when each factor is excluded $R^2(e)$ and included $R^2(i)$ to test its implication. By examining effect sizes (f^2), the researcher can tell whether any objective's effect is small (0.02), medium (0.15) or large (0.35) and to identify too weak values when they fall below 0.20 (Kock, 2010).

Table 6.8: Effect Size Quality

	ACDM Objective7	CCDP Objective5	CDPC Objective3	ContFac Objective1	IMCD Objective6	NCDev Objective2	SCDP Objective4
ACDM				0.003			
CCDP				0.152			
CDPC				0.119			
ContFac							
IMCD				0.001			
NCDev				0.045			
SCDP				0.000			

Source: Self-generated by the researcher

In Table 6.8, the effect size quality shows the various impacts that any factor has on the dependent variable of ContFac. Therefore, it could be seen that CCDP (0.152) is the one that has the greatest effect on the ContFac. This is followed by CDPC (0.119). Thus, from the values of this research, the effect that these objectives will have on the petroleum industry for socio-economic transformation in South Africa are soundly medium for CCDP; small for both CDPC and NCDev; and very weak for SCDP, IMCD

and ACDM in that order. Figure 6.3 depicts the visual understanding of the effect that any factor has on the dependent variable of ContFac.

Figure 6.3: f Square (f^2)

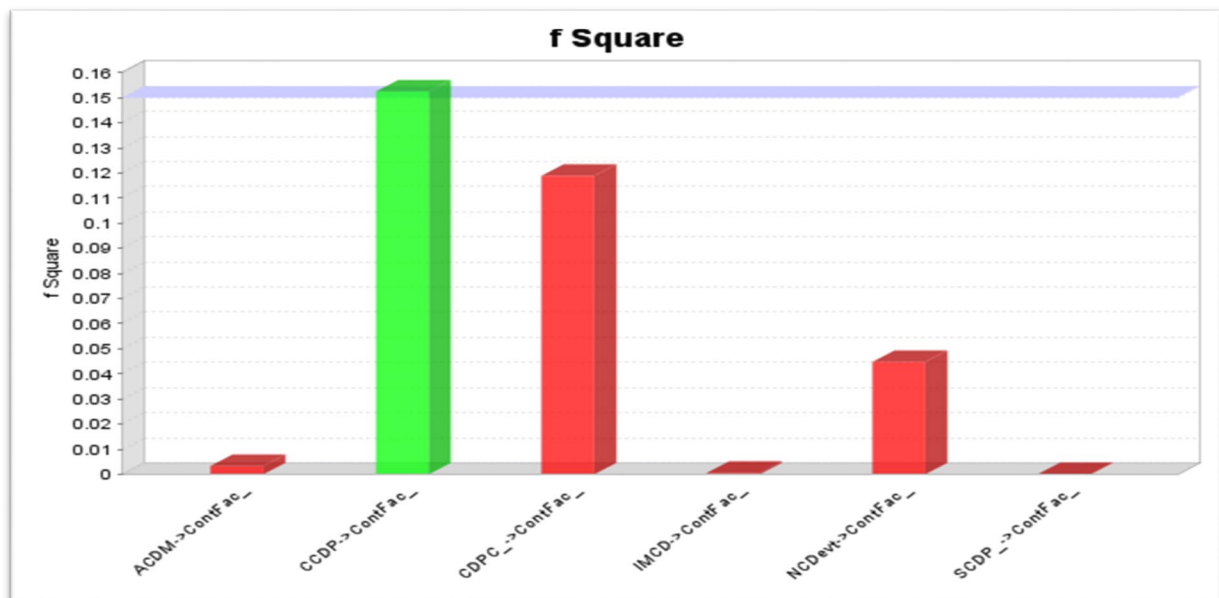


Figure 6.3 reflects indicator Data (Correlations). It confirms in a pictorial form that CCDP-ContFac is the best variable under the overall objective of the study, followed by CDPC-ContFac and NCDev-ContFac. Finally, all the indicators and how they correlate with each other are shown in Table 6.9, which is rounded to two decimal places. From Table 6.9, it can be observed that the final indicators correlate well with each other to produce a diagonal result of 1.000.

Table 6.9: Empirical Correlation Matrix

	ACDM2.1	ACDM2.2	ACDM4.1	ACDM4.3	CCDP2.2	CCDP2.3	CCDP4.1	CDPC5.2	ContFac1.2	ContFac1.3	ContFac4.2	ContFac5.2	IMCD1.2	IMCD2.2	IMCD2.3	IMCD3.1	IMCD3.2	IMCD4.1	IMCD4.2	IMCD4.3	IMCD5.1	IMCD5.2	NCDVT3.5	NCDVT4.2	SCDP4.1	SCDP4.2
ACDM2.1	1.000																									
ACDM2.2	0.809	1.000																								
ACDM4.1	0.330	0.427	1.000																							
ACDM4.3	0.335	0.409	0.675	1.000																						
CCDP2.2	0.074	0.135	0.172	0.311	1.000																					
CCDP2.3	0.233	0.350	0.287	0.382	0.816	1.000																				
CCDP4.1	0.102	0.262	0.406	0.475	0.548	0.576	1.000																			
CDPC5.2	0.305	0.299	0.433	0.500	0.144	0.132	0.377	1.000																		
ContFac1.2	0.205	0.235	0.409	0.378	0.202	0.157	0.133	0.494	1.000																	
ContFac1.3	0.163	0.213	0.319	0.596	0.344	0.343	0.275	0.440	0.664	1.000																
ContFac4.2	0.277	0.407	0.210	0.234	0.433	0.413	0.399	0.494	0.503	0.494	1.000															
ContFac5.2	0.259	0.333	0.298	0.246	0.422	0.385	0.280	0.475	0.364	0.413	0.627	1.000														
IMCD1.2	0.718	0.602	0.186	0.120	0.113	0.227	0.127	0.241	0.140	0.044	0.221	0.221	1.000													
IMCD2.2	0.400	0.393	0.405	0.182	-0.059	-0.063	0.269	0.393	0.222	-0.055	0.242	0.216	0.500	1.000												
IMCD2.3	0.498	0.522	0.410	0.354	0.041	0.044	0.282	0.389	0.271	0.156	0.237	0.208	0.543	0.817	1.000											
IMCD3.1	0.446	0.404	0.419	0.341	-0.062	-0.038	0.287	0.584	0.223	0.091	0.312	0.381	0.419	0.543	0.574	1.000										
IMCD3.2	0.580	0.489	0.426	0.325	0.103	0.120	0.264	0.551	0.230	0.130	0.402	0.506	0.542	0.525	0.557	0.859	1.000									
IMCD4.1	0.539	0.398	0.247	0.282	0.158	0.086	0.213	0.425	0.237	0.083	0.378	0.368	0.617	0.664	0.575	0.582	0.630	1.000								
IMCD4.2	0.572	0.455	0.428	0.222	0.035	0.066	0.095	0.418	0.297	0.175	0.390	0.588	0.486	0.535	0.428	0.515	0.599	0.703	1.000							
IMCD4.3	0.487	0.337	0.388	0.284	-0.077	-0.066	0.131	0.461	0.293	0.102	0.282	0.287	0.443	0.556	0.480	0.663	0.583	0.756	0.805	1.000						
IMCD5.1	0.724	0.731	0.338	0.423	0.255	0.360	0.254	0.444	0.288	0.295	0.446	0.429	0.659	0.391	0.588	0.561	0.717	0.581	0.478	0.455	1.000					
IMCD5.2	0.738	0.733	0.326	0.309	0.264	0.363	0.306	0.391	0.264	0.170	0.434	0.410	0.616	0.417	0.405	0.476	0.629	0.545	0.461	0.411	0.803	1.000				
NCDVT3.5	0.279	0.194	0.469	0.332	0.148	0.084	0.161	0.574	0.444	0.293	0.348	0.468	0.261	0.421	0.397	0.498	0.528	0.497	0.472	0.442	0.424	0.332	1.000			
NCDVT4.2	0.275	0.288	0.568	0.394	0.146	0.134	0.293	0.549	0.483	0.259	0.385	0.377	0.285	0.597	0.495	0.483	0.449	0.482	0.490	0.560	0.367	0.394	0.567	1.000		
SCDP4.1	0.033	-0.088	0.172	0.073	-0.245	-0.222	0.071	0.306	0.181	0.022	0.094	-0.031	0.175	0.466	0.322	0.313	0.254	0.445	0.266	0.419	0.150	0.061	0.303	0.340	1.000	
SCDP4.2	0.175	0.103	-0.049	-0.025	-0.292	-0.309	0.079	0.283	0.052	0.073	0.214	0.037	0.250	0.310	0.299	0.356	0.301	0.317	0.172	0.292	0.225	0.194	0.082	0.136	0.606	1.000

Table 6.9 postulates that the diagonal values which are all bigger than the underlying values stand to prove that the final variables that have been settled on in this study correlate well and perfectly.

6.4.1 Objectives testing

The evaluation of the objectives in terms of socio-economic transformation through petroleum industry development was judged by exploring the positive or negative indications and statistical significance of the p-values. Table 6.3, Table 6.5, Table 6.7 and Figure 6.1 show the results of the analysis for this study. However, the socio-economic uncertainties or volatilities in most countries are frequently influenced by factors of the business environment, most specifically by the PESTIE factors (Smit, 2011: 64), which comprise the political, economic, social, technological, international, and ecological factors (Erasmus, 2014: 106-107). In this study, objectives were confirmed in relation with the political, economic, and social (PES) factors of the PESTIE environment.

Variables that are discussed in the following sections are related to each objective of the study, based on the analysis outcome, which can be viewed from Table 6.5: Confirmatory Factor Analysis (CFA), Table 6.3: Manifest Variables (MV) and Figure 6.1: Structural Model. As indicated above, these variables are abridged as ContFac1.1 to ContFac5.3= objective1; NCDev1.1 to NCDev5.3= objective2; CDPC1.1 to CDPC5.5= objective3; SCDP1.1 to SCDP4.4= objective4; CCDP1.1 to CCDP5.3= objective5; IMCD1.1 to IMCD5.2= objective6; and ACDM1.1 to ACDM5.3= objective7. Thus, only the most dominant and scored variables are discussed through each of the seven objectives.

6.4.1.1 Objective 1: Examining the factors that contribute to socio-economic transformation in South Africa

This section deals with the investigation of variables from PES factors that contribute to socio-economic transformation (ContFac) in South Africa. Therefore, the statements designed as ContFac1.1 to ContFac5.3 were proposed to respondents to indicate the levels of agreement or disagreement. The objective1 scored an average of 79.5% (Table 6.6). Consequently, the patterns from Table 6.5 and Table 6.6 show the significant levels of agreement (whilst other levels of agreement are lower, but greater than the levels of disagreement). For example, respondents affirmed the following (Table 6.5):

- **ContFac1.2:** 77.6% of respondents acknowledged that government awareness and support of capacity development programmes in the petroleum industry could be imperative for socio-economic transformation in South Africa;
- **ContFac1.3:** 78.6% of respondents approved that an improved and best practice of policies in the energy sector, including the petroleum industry, could be a forefront key for socio-economic transformation in South Africa;
- **ContFac4.2:** 84.2% of respondents agreed that capacity development programmes best-practice in the petroleum industry can create opportunities for employees' lifestyle change; and

- **ContFac5.2:** 77.6% of respondents attested that capacity development could promote socio-economic transformation by addressing the issue of skills development within sectors such as trade, health, education, industries, politics, housing, agriculture, transportation, communal services, tourism, and recreational improvements.

Therefore, the significance of scoring patterns per statement were different per option. Accordingly, in relation with objective1, results suggest that government awareness and support of capacity development programmes in the workplace (public or private sectors), as well as improved and best-practice of policies in the petroleum industry, could create opportunities for skills development and assist for more investments in human capital capacity development. Capacity development can improve and increase the performance of employees in the workplace.

Furthermore, opportunities may possibly include improved/increased competitiveness and higher productivity in the petroleum industry; the promotion of economic growth and development; and people lifestyle improvement in the country. According to Manuel (2011: 365) and Puttewar (2016: 433-434), the direct, indirect, and induced benefits from government interventions for capacity development programmes best-practice in the workplace could respectively include the following:

- Technical or scarce skills development in the petroleum industry;
- More oil and gas services development and expansion in the country; and
- Increased opportunities for entrepreneurship development, new employment creation, and poverty and inequality reduction.

6.4.1.2 Objective 2: Identifying the nature of capacity development programmes in the South African petroleum industry

This section deals with the question that consists of identifying the nature of capacity development programmes in the South African petroleum industry (NCDvT). This objective scored an average of 88.5% (Table 6.6). However, Table 6.5 and Figure 6.1

specify the perceptions, opinions and views of respondents based on the appreciation of statements suggested to them, which indicated the following average levels of agreement:

- **NCDvT3.5:** 88.9% of respondents agreed that capacity development programmes could empower the workforce with the required skills that can support and promote the culture of creativity, innovation, and competitiveness in the workplace (petroleum industry); and
- **NCDvT4.2:** 88.1% of respondents agreed that capacity development programmes in the petroleum industry could have strong link-effects between petroleum industry development and socio-economic transformation in South Africa.

Furthermore, Respondents indicated that capacity development is not yet fully implemented to bridge the gap of technical skills shortages in the petroleum industry. More interventions or actions are required for positive effects from capacity development programmes in the workplace. This objective scored the third most important place at a competitive significance level of $p=0.001$. The beta coefficient was however (β 0.215). The nature of capacity development programmes in the South African petroleum industry should thus be identified carefully, as this will have great impact in addressing the socio-economic transformation agenda in the country. Therefore, the aforementioned results mean that there is expectation that capacity development programmes could play a significant role in the public and private sectors by promoting leadership, management, technical and adaptive capacities development, as well as creating opportunities for human capital behaviour capacity development in the workplace (OECD, 2015: 4).

In addition, capacity development can stimulate the ability to produce change by empowering individuals, leaders, organisations, and society with quality skills training programmes that promote greater transparency, accountability, and a more economic use of capital in the petroleum industry and in the country (UNDP, 2009: 3). Furthermore, capacity development can cause major opportunities for effective skills usage in the workplace, increase economic activities and reduce the risk of negative effects in the petroleum industry.

Thus, the aforementioned results suggest that leadership, managers and workers need to be constantly empowered with conceptual, interpersonal, behavioural and technical skills programmes that will enable them to remain competitive, effective and efficient in a working or technically demanding industry. Moreover, results also suggest that capacity development programmes in the workplace can support and promote employees with scarce skills that develop the nature of positive human capital capacity in the petroleum industry. In the public or private sectors, capacity development can benefit stakeholders by strengthening trust, building commitment and good relationships. Economically, instability resulting from global competition and technological innovation require that public and private organisations should align with capacity development programmes for sustainable development and competitive advantages (Hossain and Roy, 2016: 1023).

6.4.1.3 Objective 3: Investigating how capacity development programmes can contribute to socio-economic transformation in South Africa

In this section, Table 6.5 and Figure 6.1 disclose that objective3 scored the highest (100%) than others by the respondents. Therefore, respondents accredited that:

- **CDPC5.2:** 100% of respondents believed that capacity development programmes could be the engine or locomotive of socio-economic transformation in South Africa by supporting skills training programmes that promote integrity, accountability, trustworthiness, honesty, empathy, loyalty and solidarity in the workplace, whether in the public or in the private sectors;
- **CDPC3.1:** 98.8% of respondents indicated that at a micro-level, the performance of the petroleum industry depends to a large extent on the skills/abilities/competencies development of the workforce;
- **CDPC3.4:** 81.5% of respondents showed interest that efforts and resources expended towards addressing the triple challenge (poverty, unemployment, and inequality) will be in vain if left out of capacity development best practice; and

- **CDPC4.2:** 75.8% of respondents decided that the research on capacity development programmes could boost the politics of skills development for employment, skills for competitiveness and skills for poverty reduction.

This investigation shows that capacity development programmes can contribute effectively to petroleum industry development and consequently to socio-economic transformation in South Africa at ($\beta=0.339$, $p=0.000$). At this coefficient ($\beta=0.339$) and significance level ($p=0.000$), this makes this agenda the most important of all the factors considered for this study. However, in light of the aforementioned, the results from this objective demonstrate the strong support of respondents of the fact that capacity development programmes could be an important factor for socio-economic transformation in South Africa. Therefore, this also means that human capital capacity development, scientific, technological, and institutional and resource capabilities are ingredients of capacity development that could drive socio-economic transformation in the country (UNDP Report, 2011: 1-4).

In addition, this likewise implies that skills training programmes in any organisation (public or private), including the petroleum industry, could successfully or effectively bring together government and private sectors to efficiently support and promote the process of human capital capacity development in the workplace. Consequently, strong support from stakeholders involved in the South African petroleum industry could generate positive impacts in public, economic, social, cultural, and educational domains of life (Noya, 2009: 2-8). Thus, capacity development interventions are expected to bring change in various socio-economic spheres. Accordingly, change may be projected on the improvement of employment policies and in the way business is done (to gain competitive advantages and avoid the risk of being left behind).

In addition, change may be predictable on the improvement of operations related to human, functional, behavioural, and technical capacities, as well as on the way individuals, organisations and society could strengthen and maintain capabilities to set and achieve their goals and objectives (African Development Bank Group Report, 2013: 31-42). Furthermore, the positive effects of capacity development programmes on socio-economic transformation in South Africa can be guaranteed by ensuring the sustainability of research for human skills development into the future in all levels of responsibility; including managerial, personnel, technical expertise, and

entrepreneurial skills development (African Development Bank Group Report, 2013: 30-39). Lastly, the socio-economic benefits from capacity development interventions could be projected in terms of fostering the vision for innovation, creativity, competitiveness, as well as in terms of facilitating people's access to public and private facilities, and boosting the earnings of employees (Noya, 2009: 5-8 and Mosala, 2017: 330-332).

6.4.1.4 Objective 4: Investigating the extent to which capacity development programmes focussing on skills development have contributed to petroleum industry and socio-economic transformation in South Africa

This objective investigated the extent to which capacity development programmes focussing on skills development have contributed to petroleum industry development and socio-economic transformation in South Africa (SCDP). The average score of this objective was appreciated at 89.3%. This objective scored the least coefficient and significant values at ($\beta=0.009$, $p=0.877$). It therefore stands to reason that capacity development programmes focussing on skills development have not contributed significantly to petroleum industry and socio-economic transformation in South Africa or probably, it has not been carried out appropriately. This should serve as an opportunity to fill this gap of technical skills shortages. However, in relation with this objective, respondents postulated that:

- **SCDP1.3:** 89.3% of respondents confirmed that the government and the South African petroleum industry are aware that human capital capacity development could play a crucial role towards promoting petroleum industry development and socio-economic transformation in the country, but there could be lack of policies best-practice in the process of implementing the existing framework/model of capacity development that supports technical skills and other scarce skills development in the petroleum industry/country, or there could be a lack of appropriate best-practice of capacity development programmes in the workplace;
- **SCDP2.1:** 93.9% of respondents acknowledged that even if in some areas/fields of the petroleum industry skills training programmes are effectively and successfully established and implemented, this must not be the case for

the entire petroleum industry. Capacity development programmes are not covering all sub-sector of the entire South African petroleum industry, given that there are still critical issues related to technical skills shortages, skills waste and the deficit of positive human capital capacity- whether in the oil field or in other socio-economic sectors of the national economy;

- **SCDP2.3:** 95.0% of respondents approved that efforts towards radical socio-economic transformation could be wasted efforts/resources out of human capital capacity/technical skills development and out of capacity development programmes best-practice in the public or private sectors, which is supposed to promote positive human capital capacity development in the workplace or in the country as whole; and
- **SCDP4.4:** 91.6% of respondents indicated that there could be inadequate or insufficient budget/funds to support the process of technical skills training programmes in the petroleum industry, or funds are sufficiently available but inappropriately managed in terms of promoting scarce skills development in the petroleum industry.

The results from objective4 suggest that for successful best-practice of policies supporting a framework/model of capacity development programmes in the South African petroleum industry, the government and actors/stakeholders should work together through engaging vigorous actions that could promote the improvement of policies which support employees' skills development in the workplace (Hammond, 2011: 10). In addition, actions need to be taken concomitantly by the government and the petroleum industry to improve the interventions and contribution of capacity development programmes for human capital capacity development (Department of Higher Education and Training Annual Report, 2016/2017: 16 and Bloch, 2000).

Furthermore, in facilitating capacity development interventions in the petroleum industry, the petroleum industry together with the South African government should improve or develop mechanisms that support the process of monitoring the cost of capacity development services (cost of technical skills training programmes) to alleviate the challenges affecting local or international providers of capacity

development programmes (Machika, 2014: 4). Acting in that way could result in planning accurately for technical skills and other scarce skills development in the petroleum industry and equally create or promote opportunities for work-related training programmes without gender-based discrimination in the workplace. Possibly, government interventions towards supporting and promoting scarce skills development in the petroleum industry (workplace) could be a sine qua non condition for socio-economic transformation in the country. Consequently, capacity development could generate the emergence of small business (entrepreneurship) development (The OECD Report, 2015: 5; Viljoen, 2016 and Manuel, 2011: 90).

6.4.1.5 Objective 5: Identifying the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry

In this section, respondents were required to indicate the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry (CCDP). This objective scored an average of CCDP= 87.6% responses. However, the challenges affecting the implementation of capacity development programmes in the petroleum industry is the next most important objective per this study. It accounted for ($\beta=0.312$, $p=0.000$). Hence, after setting this objective, everything (awareness, efforts, and resources) must be done to confront/tackle the barriers affecting technical skills development, skills waste alleviation and positive human capital capacity development in the public or in the private organisations, and deal with them immediately. Thus, respondents were very assertive and confident in that:

- **CCDP1.3:** 83.4% of respondents revealed that the lack of policies best practice in supporting capacity development programmes could be one of the key barriers affecting technical skills development in the petroleum industry;
- **CCDP 2.1:** 90.5% of respondents indicated that technical skills shortages in the petroleum industry could be related to the lack of capacity development programmes best practice;

- **CCDP2.2:** 91.7% of respondents accepted that the petroleum industry is not fully addressing and supporting capacity development programmes as a tool that stimulate human capital capacity development in the workplace;
- **CCDP2.3:** 92.1% of respondents acknowledged that technical skills shortages in the petroleum industry are a result of neglecting or lacking an appropriate model of capacity development as a vital tool to employees' technical skills development; and
- **CCDP5.1:** 92.8% of respondents recommended that capacity development programmes need to be sufficiently explored, promoted, and applied in strengthening the abilities of employees in the petroleum industry.

Furthermore, there could be more challenges or barriers affecting the implementation of capacity development programmes in the South African petroleum industry. In this study, challenges were examined in relation to the political, economic, and social factors. Therefore, based on the statistics presented further above, it may be argued that the government of South Africa could be held responsible for lacking considerable awareness and ability to enforce policies that promote technical skills and other scarce skills development in the petroleum industry. Insufficient funds or available funds mal-management and the lack of appropriate or best-practice of the model of capacity development in the petroleum industry could be amongst the most critical challenges affecting human capital capacity development in the workplace.

Unfortunately, the shortage of technical skills such as Electrician; Boiler-maker; Mechanical engineer; Safety, Health, Environment and Quality (SHE&Q) practitioner; Programme or Project Manager; Programme or Project Manager; Mechanical Fitter; Electrical Engineer; Retail Pharmacist and Chemist, etc. are still an alarming situation, which requires strong interventions. These technical skills are not sufficiently developed as there is still a strong demand for these categories of technical skills in the South African petroleum industry (CHIETA Regional Skills Forums, February 2020). In addition, unawareness, or inadequate implementation of policies to support the retention of people with technical skills, whether in the petroleum industry or in the country, is a critical challenge for which more attention from stakeholders necessitates

bridging the gap of technical skills drain in the country. All these challenges and particularly the mismanagement or mal-administration of funds/budget allocated to sponsor technical skills development programmes in the petroleum industry could result in a sustainable situation of technical skills shortages/drain in the country (United Way of Calgary and Area Report, 2011: 11-12 and Smit, 2016: 68). Therefore, it can be agreed that technical skills shortages in the petroleum industry could have many sources/causes. Firstly, technical skills shortages could be associated with the PESTIE factors' instabilities; the lack of motivating employees' interest in technical skills training programmes; and the lack of appropriate support for mentorship programmes or capacity development programmes providers (Smit, 2016: 59, 68, 71). Additionally, technical skills shortages could be related to the lack of appropriate mechanisms for monitoring and evaluating the process of capacity development programmes in the petroleum industry (Williams, 2016: 47 and Smit, 2011: 79).

Moreover, employees' resistance to learning programmes and insufficient efforts from various stakeholders (public-private partners) in promoting capacity development as a tool that can reduce or bridge the gap of technical skills shortages and promoting scarce skills development in the petroleum industry could be amongst the critical factors. Thus, it can be indicated that companies which are lacking capacity development programmes best-practice could also suffer a lack of innovation, creativity, and competitiveness. In other words, neglecting the improvement and best practice of policies that support human capital capacity development, as well as neglecting capacity development programmes best-practice in the workplace could affect efforts/resources committed to supporting socio-economic transformation in the country.

6.4.1.6 Objective 6: Exploring international models of capacity development programmes that promote human capital capacity development, petroleum industry development and socio-economic transformation

In this section, respondents were required to reflect on the role of international models of capacity development programmes (IMCD) in promoting human capital capacity development, petroleum industry development and socio-economic transformation. Therefore, in terms of the high response rate in this study, the next in line was this objective which accounted for ($\beta=0.029$, $p=0.701$). The international models of

capacity development programmes that promote human capital capacity development can serve as a guiding yardstick to develop one for South Africa. Hence, although this seems to be of less significance compared to the previous ones, it should still be given the necessary consideration because it passed the validity and reliability tests.

Respondents' opinions, perceptions, or views in relation with objective six (6) scored 78.2% of responses. The results from the analysis linked to this objective attested that international models of capacity development could assist in improving the local one. Moreover, respondents' views are as follow:

- **IMCD3.1:** 79.2% of respondents agreed that an improved capacity development model/framework based on the international one could have a sound impact in terms of promoting petroleum industry value chain activities such as crude oil, head office, refinery, distribution, storage, wholesale and retail activities upgrading;
- **IMCD3.2:** 86.4% of respondents approved that an international model of capacity development could have a positive influence on the development of local human capital capacity in various other related industries;
- **IMCD4.1:** 84.1 % of respondents were favourable in that capacity development models could be used as a reference by the way the petroleum industry may evaluate capacity development services in terms of skills acquisition and usage from the providers of capacity development programmes; and
- **IMCD5.1:** 82.0% of respondents confirmed that the South African petroleum industry would need an appropriate framework/model of capacity development that may be similar to developed petroleum industries from other world regions for the reason of competitive advantages.

The views of respondents in this objective may be further upgraded through the fact that the South African petroleum industry could increase its influence and contribution to socio-economic activities development by the effects of adapting and improving the

existing framework/model of capacity development to the international ones (UNEP, 2017: 5 and Peek, 2008: 3). This implies that continuous investments in human capital capacity development by taking account of models of capacity development from other world regions could create the opportunity to pair South African firms and employees with leading international companies in terms of functional, technical, and behavioural capacity development (Peek, 2008: 3 and Kim, 2013).

Studies on international models of capacity development (Corkin, 2017: 3; Carneiro, 2015: 12; Kim, 2013; Bester, 2015: 2; Kim, 2013 and Rothman, 2012: 1-2); Ovadia, 2016; and Peek, 2008: 51) argued that models of capacity development could have an impact on the following:

- Effects on the public environment for petroleum industry development and socio-economic transformation;
- Effects on the private environment for petroleum industry development and socio-economic transformation;
- Effects on the economic environment for petroleum industry development and socio-economic transformation;
- Effects on the social environment for petroleum industry development and socio-economic transformation; and
- Effects on promoting human capital capacity development, petroleum industry development and socio-economic transformation from any business where capacity development can be considered as a significant tool that promotes technical and other scarce skills development. That business or organisation must adapt and apply innovative model of skills development programmes in its structures for socio-economic competitive advantages.

6.4.1.7 Objective 7: Developing an appropriate capacity development-best practice model aligned to human capacity development for the South African petroleum industry development and socio-economic transformation

The best-practice model of capacity development programmes aligned to human capital capacity development in the petroleum industry for socio-economic transformation is the next important objective. It scored ($\beta=0.062$) at a significant level of ($p=0.376$). In terms of percentage, this objective scored (ACDM) 78.8%. At this significance level, one could only say that developing an appropriate capacity development best-practice model should not be taken for granted if a kind of standard is required to ensure adherence. Based on the outcome of this test, this should provide a hint of the factors that need to be given thoughtful deliberations.

However, respondents were assertive in that developing an appropriate model of capacity development in the South African petroleum industry could generate a sound impact linked to technical skills development; ensure the retention of technically skilled employees in the workplace; skills waste alleviation and positive human capital capacity development (HRD-SA 2010 – 2030, 2009: 9-10; Folscher, 2006: 1 and Erasmus, 2018). Consequently, positive human capital capacity development in the petroleum industry or in any other sector of the economy (public and private sectors) could also positively influence the socio-economic transformation process in South Africa. Thus, with reference to Figure 6.1 (structural model), the analysis of this objective generated the following results:

- **ACDM2.1:** 73.7% of respondents declared that the CDP-PUSH-Effects model (suggested by the researcher in this study) could facilitate local and international experts of capacity development programmes to work together to reinforce an active partnership between government's Department of Energy, financial institutions, petroleum industry, skills training programmes providers and many more to imperatively improve/develop and ensure the best-practice model of capacity development that promotes technical skills (scarce skills) development in the workplace, as well as to supporting/financing-related capacity development programmes activities in the South African petroleum industry;

- **ACDM2.2:** 81.1% of respondents approved that the CDP-PUSH-Effects model could facilitate, assist and guide local experts of capacity development programmes to produce/generate results which could be similar to those seen in developed petroleum industries in terms of technical skills or scarce skills development in the South African petroleum industry;
- **ACDM4.1:** 79.4% of respondents agreed that the CDP-PUSH-Effects model could facilitate and generate greater opportunity in training and transferring technical skills (knowledge) based on petroleum industry requirements or needs for capacity development in areas of skills shortages; and
- **ACDM4.3:** 80.6% of respondents approved that the CDP-PUSH-Effects model should be applied to facilitate technical skills and other scarce skills development by taking into consideration employees' specific skills background and the experience gained in the workplace.

Moreover, in light of the aforementioned description, developing an appropriate capacity development model aligned to human capital capacity development in the petroleum industry and for socio-economic transformation in South Africa will require the following:

- Efforts/resources to improve the contribution of capacity development programmes for petroleum industry performance and socio-economic transformation processes in the country (OECD, 2015: 5);
- A new dynamic capacity development model that could contribute in promoting oil field services development with emphasis on positive human capital capacity development: technical, functional and behavioural capacity development (HRD-SA 2010 – 2030, 2009: 9-10);
- The CDP-PUSH-Effects model could facilitate sustainable solutions to existing/old problems aligned to skills shortages in the petroleum industry and contribute to economic growth in the country (Viljoen, 2016);

- An improved model of capacity development such the CDP-PUSH-Effects model could facilitate the review of policies that support skills development in the petroleum industry and also facilitate the employment of foreign experts in closing the gap of skills shortages in the petroleum industry; and
- The CDP-PUSH-Effects model could assist to campaigning about an increased awareness from stakeholders to addressing the real issues of technical skills shortages affecting the petroleum industry and to promoting human capital capacity development now and into the future.

Thus, it can be suggested that the CDP-PUSH-Effects model, if well implemented in the petroleum industry, could be profitable towards creating opportunities for tackling technical skills shortages and strengthening local workforce capacity development. Studies (such as: The OECD, 2015: 5; Manuel, 2011: 90; Zino, 2014: 4; Rodrik, 2007: 2; Manuel, 2011: 365; and ILO, 2010: 34 and studies such as: Smit, 2016: 58; HRD-SA 2010 – 2030 2009: 9-10; Folsher, 2006: 1 and Erasmus, 2018) have emphasised that the development of a model of capacity development must consider policies reform and best-practice a key strategy for public and private organisations to bridge the gap of technical skills shortages effectively.

6.5. MIXING OF QUANTITATIVE AND QUALITATIVE RESULTS

6.5.1 Introduction

This study applied the mixed methods design comprising the convergent parallel approach to describe relationships, comparison and interpretations or predictions of both quantitative and qualitative results (Creswell, 2018: 70). Thematic analysis was used based on the analysis of data from interviews. The coding and generation of themes and sub-themes from interview responses were computerised by using Nvivo12 Pro-software package. In addition, the interview responses were grouped according to the sub-themes, which are linked to the main themes from quantitative data.

This section firstly addresses the results from the interview responses (QLR), which are later converged or correlated to the main themes (results) from the quantitative survey (QNR). The interview was used as the second tool in the process of collecting data. However, nine (9) successful interviews out of 12 were targeted from four organisations, including SAPIA, CHIETA, the Government's Department of Energy (petroleum sub-sector department) and Engen refinery. Data collected from interviews was processed using Nvivo12 Pro-software for thematic analysis. Through the Nvivo12 Pro-software package, interview responses from respondents were individually processed and coded as QLR1: Respondent 1 to QLR9: Respondents 9. Table 6.11 (Appendix D) describes the coding and inference of qualitative results. The focus on qualitative data was to gain supportive information and measure the critical perception and understanding of experts from organisational members of the South African Petroleum Industry Association (SAPIA) to confirm or relate the interview results to those of quantitative results.

However, the mixed methods analysis was considered with trends of associating or converging the QLR with QNR in relation to the objectives of this study. Furthermore, the interview data was gathered by means of reference to the political (government), economic and social factors. Quantitative data were processed/analysed using PLS-SEM software package (Smit, 2011: 64). Therefore, results from the PLS-SEM analysis and Nvivo analysis are mixed or converged, discussed and interpreted in the sections further below.

6.5.2 Results, Discussion, and Interpretation of Findings

According to Creswell (2015: 37), mixing data from quantitative and qualitative research implies merging two databases, one numeric and one text-based. This approach is called convergent parallel design (Table 5.4 and Figure 5.3). However, the purpose of convergent parallel design for this study was to analyse the results from the beginning with a qualitative strand. Creswell (2015: 2) and Creswell (2011: 64) postulated that a strand is a constituent/element of the study that incorporates the basic process of conducting quantitative or qualitative research, including posing question, collecting data, analysing data, as well as interpreting results based on that data.

In this study, the convergent parallel design was useful in drawing the inferences of the qualitative results that explain the quantitative results. Thus, arguments and explanations were relevant to the PESTIE framework, from which only the political, economic, and social factors were examined. The sub-themes from the qualitative results interrelated with the main themes from the quantitative results were many. Only the key interesting components relevant to the aim and objectives of the study were captured and presented in Table 6.11 (Appendix D). However, Table 6.11 relates to Figure 5.3 (Mixed methods Design for Data analysis), which describes the process of converging qualitative results and quantitative results. Thus, only data from section B, objective 1 to section H, objective 7 are discussed in Table 6.11. Section A, which comprises the biographical data of respondents, is firstly and briefly examined in the next section.

6.5.2.1 Section A: Mixing and Interpretation of Biographical Data

The biographical data revealed the following results: in the quantitative results, it was indicated further above that 292 out of 388 respondents participated in the survey, which represented respectively 54% of males and 46% of females. However, in the qualitative research, 9 (75%) out of 12 interviews were successfully conducted, including 8 males and 1 female, representing respectively 66.7% of males and 8.3% of females. Therefore, a total of 301 respondents out of 400 participated in the study. Thus, the findings indicate that the overall ratio of males and females that participated in this study was approximately 75.25% of respondents.

As discussed earlier, it is clear that the results indicate a more dominant participation of males than females in this study. This demonstrates the level of inequality in terms of respondents' participation in this study, as well as the level of inequality between males and females in the workplace whether in terms of structural responsibilities (function) or in terms of decision-making in the workplace. Gender equality structures in the country or in the workplace should encourage and motivate more participation of female employees in research studies in the workplace. Females' participation and contribution in this study is much appreciated, given that those who participated have shared and provided the high-quality information expected by the researcher. As it can be difficult to reach gender equality in a research study, everyone (employees) in the workplace should be encouraged and motivated to participate in the process of

facilitating the researcher's data collection. More awareness campaigns in terms of gender participation in research studies in the workplace could bridge the gap of gender inequality.

6.5.2.2 Inference of Quantitative and Qualitative results

Respondents were required to indicate their levels of appreciation, opinion and views regarding the role capacity development programmes could play for socio-economic transformation in South Africa through the case study of the South African petroleum industry. Table 6.11 (Appendix D) indicates the inference of quantitative and qualitative results. It comprises factors relating quantitative findings from the qualitative results, which are discussed, based on objectives defined for this study. Therefore, according to Creswell (2015: 37), qualitative results explain and justify quantitative findings. In this study, as can be observed, qualitative results are significantly correlated to quantitative findings. The section that follows gives the description and interpretation of quantitative and qualitative results.

6.5.2.3 Description and Interpretation of Quantitative and Qualitative results

The general process that led to the achievement of the objectives of this study consisted of identifying a problem, defining research questions, gathering, and analysing data, as well as interpreting results (Creswell, 2015: 4). However, in mixing results, the following abbreviations or acronyms were applied:

- ❖ In the Quantitative Results (QNR), the following symbols or codes were designed to process data by means of the PLS-SEM analysis technique:
 - **ContFac1.1 to ContFac5.3 (objective 1):** Examining the factors that contribute to socio-economic transformation in South Africa;
 - **NCDvT1.1 to NCDvT5.3 (objective 2):** Identifying the nature of capacity development programmes in the South African petroleum industry;
 - **CDPC1.1 to CDPC5.5 (objective 3):** Investigating how capacity development programmes can contribute to socio-economic transformation in South Africa;

- **SCDP1.1 to SCDP4.4 (objective 4):** Investigating the extent to which capacity development programmes focussing on skills development has contributed to petroleum industry and socio-economic transformation in South Africa;
 - **CCDP1.1 to CCDP5.3 (objective 5):** Identifying the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry;
 - **IMCD1.1 to IMCD5.2 (objective 6):** Exploring the international models of capacity development programmes that promote human capital capacity development, petroleum industry development and socio-economic transformation; and
 - **ACDM1.1 to ACDM5.3 (objective 7):** Developing an appropriate model of capacity development aligned to human capital capacity development for the South African petroleum industry and socio-economic transformation.
- ❖ In the Qualitative Results (QLR), the acronyms were designed as QLR1 to QLR9 symbols to indicate the code attributed to respondents through qualitative data analysis (Nvivo12 software package). Similarly, the qualitative symbols represent the code that was attributed to respondents, which are linked to each objective of the study (from objective 1 to objective 7).

Thus, the mixing, discussion, and interpretation of QNR and QLR results are provided in the sections that follow:

6.5.2.3.1 Mixing of QNR and QLR key results related to objective 1: ContFac1.1 to ContFac5.3 and QLR1 to QLR9

In the QNR data collection, respondents were required to indicate the factors that could contribute to socio-economic transformation in South Africa. The key QNR are as follows:

- **ContFac1.2:** 77.6% of respondents acknowledged that government awareness and support to capacity development programmes in the petroleum industry could be imperative for socio-economic transformation in South Africa;
- **ContFac1.3:** 78.6% of respondents approved that an improved and best practice of policies in the energy sector, including the petroleum industry could be a forefront key for socio-economic transformation in South Africa;
- **ContFac4.2:** 84.2% of respondents agreed that capacity development programmes best practice in the petroleum industry can create opportunities for employees' lifestyle change; and
- **ContFac5.2:** 77.6% of respondents attested that capacity development could promote socio-economic transformation by addressing the issue of skills development within sectors such as trade, health, education, industries, politics, housing, agriculture, transportation, communal services, tourism, and recreational improvements.

In the QLR data collection, respondents were required to indicate how capacity development programmes could contribute to socio-economic transformation in South Africa. The key QLR results related to objective 1: Examining the factors that contribute to socio-economic transformation in South Africa are as follows:

- Government legislation/policies improvement and best-practice are key factors to promote petroleum industry development and socio-economic transformation processes in South Africa (QLR1). Government awareness campaigns about capacity development programmes may possibly be a forefront key for human capital capacity development, petroleum industry development and socio-economic transformation in the country (QLR2);
- Education in general is a key factor that addresses socio-economic transformation (QLR6). Particularly, capacity development is an important factor that addresses issues of community in terms of improving people education and increasing their skills/abilities or capabilities for readiness for the

world of work or for entrepreneurship development (QLR3). Capacity development programmes can improve the professionalism of employees and promote the culture of innovation, development and modernisation in the way of doing things that contributes to petroleum industry development and socio-economic transformation in the country (QLR1);

- People and services providers of capacity development are keys factors to socio-economic transformation in the country (QLR4). They facilitate employees' ability to identify opportunities in the workplace and promote societal development (QLR7). They also promote organisational competitiveness through human capital capacity development in the petroleum industry (QLR2), facilitate and promote opportunities for better jobs, people's income, and life-style improvement (QLR8).

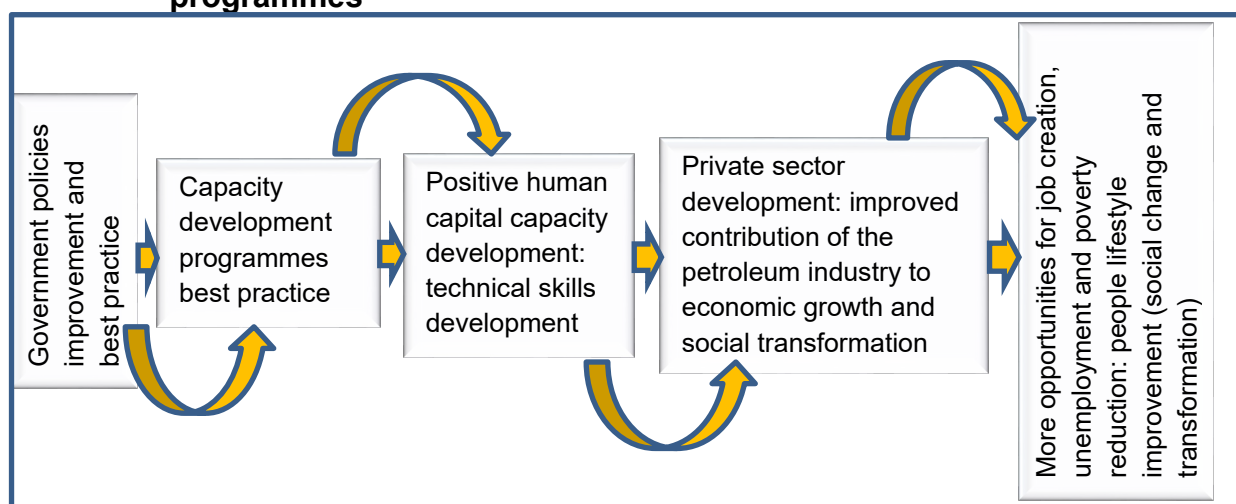
6.5.2.3.2 Interpretation and discussion aligned to QNR and QLR results about factors that contribute to socio-economic transformation in South Africa

Many factors may possibly contribute to socio-economic transformation in South Africa. In this study, capacity development programmes were examined as one of the key factors associated or linked to the political, economic, and social factors (Erasmus, 2014: 106-108). Therefore, the investigation consisted of exploring the role that capacity development programmes could play in the public and private sectors towards contributing to socio-economic transformation in South Africa. However, in the public sector, the QNR and QLR results revealed a significant correlation, given that QLR accurately explains QNR. This implies that policies that support capacity development in the petroleum industry do exist.

However, it is observed that there is a lack of government awareness to improve and ensure the best practice of policies that support capacity development programmes in the petroleum industry. The challenges of technical skills shortages, skills waste, and the deficit of positive human capital capacity development in the public and private sectors demonstrate sufficiently that the South African government is failing to improve and implement policies that support capacity development programmes in the

workplace. Consequently, it will be impossible to bridge or close the gaps of technical skills shortages, skills waste, and the deficit of positive human capital capacity without the restructuring or improvement and best practice of policies, laws and regulations that promote scarce skills development in the workplace. Thus, the correlation between capacity development programmes, the public sector, petroleum industry and socio-economic transformation is based on the development of positive human capital capacity. This means that the best practice of policies, programmes and strategic plans that support capacity development programmes in the workplace could result in increasing the productivity, competitiveness, innovation, and performance of socio-economic activities in the petroleum industry. The following correlation could possibly happen:

Figure 6.4: Impacts of policies best-practice on capacity development programmes



Source: Self-generated by the researcher

The lack of improved and best practice of policies will continue to cause barriers to technical skills development in the petroleum industry. Therefore, this situation could have a strong influence on skills shortages or the drain of skilled employees from the South African petroleum industry or from the country. Thus, the attempt to bridge the gap of skills shortages consists of instituting an awareness campaign in favour of measures that promote policies, programmes, strategic plans improvement, and best practice to support the process of capacity development best practice; positive human capital capacity development; petroleum industry development and socio-economic transformation in the country.

6.5.2.3.3 Mixing of QNR and QLR key results related to objective 2:

NCDvT1.1 to NCDvT5.3 and QLR1 to QLR9

In the QNR data collection, respondents were required to identify the nature of capacity development programmes in the South African petroleum industry. The key QNR are as follows:

- **NCDvT3.5:** 88.9% of respondents agreed that capacity development programmes can empower the workforce with the required skills that can support and promote the culture of creativity, innovation, and competitiveness in the workplace (petroleum industry), but it is not yet fully implemented to bridge the gap of technical skills shortages in the petroleum industry; and
- **NCDvT4.2:** 88.1% of respondents approved that capacity development programmes in the petroleum industry could have strong link-effects between petroleum industry development and socio-economic transformation in South Africa.

In the QLR data collection related to objective 2: The nature of capacity development programmes in the South African petroleum industry, respondents were required to indicate what the necessary actions that both the petroleum industry and South African government could employ to improve the contribution of capacity development programmes for petroleum industry development and socio-economic transformation. The key QLR results are as follows:

- Capacity development is creative and innovative. New skills or new knowledge could offer competitive advantages to any organisation that is flexible and ready to constantly empower its staff members (4).
Actions are required from government and private organisations to participate in the process of capacity development programmes usage in the petroleum industry (QLR4); and
- Technology advancement is in the centre of many socio-economic activities in this era. However, technology cannot produce change or transformation without people having the ability to manipulate technologies. Therefore, in all socio-

economic sectors, including the petroleum industry, dimensions of human capital capacity development remain a key factor for organisational development (QLR3). New and advanced technologies are factors that can contribute to refining capacity development. Therefore, capacity development improves the ability of workers for effectiveness, efficiency, and increased productivity (QLR9).

6.5.2.3.4 Interpretation and discussion aligned to QNR and QLR results about the nature of capacity development programmes in the South African petroleum industry

In this objective, a significant correlation between QNR and QLR results can be observed. Respondents acknowledged that periodically, capacity development programmes are applied in the petroleum industry. However, they also indicated that there is need for capacity development to be fully implemented in the area of scarce skills development. Respondents revealed that skills training programmes are very selective and do not provide equal opportunities in the petroleum industry. Certain individuals or groups of employees participate in the skills training programmes, while others are underprivileged/disadvantaged. Thus, the link-effects between human capital capacity development, petroleum industry development and socio-economic transformation depend on how an organisation invests resources to empower its employees.

Therefore, respondent (QLR5) indicated that change is possible if it can start with human capital. Change becomes unrealistic when people are not able to translate their skills, capacities or aptitude into actions that bring change. He further postulated that skills training programmes are a synonym of change when there is awareness of the best practice of the skills that people have to produce for expected change. Thus, the South African petroleum industry must emphasis on refreshing skills training programmes in the workplace to ensure that the industry have skilled and reliable employees (QLR8). DUT as a provider of capacity development should constantly improve the interaction with the petroleum industry (Chemistry advisory board, people from SAPREF, ENGEN and other petroleum organisations) towards providing or organising technical skills training programmes.

Similarly, the petroleum organisations should frequently interact in partnership with DUT and other academic institutions on how students should be prepared to embrace new responsibilities in the petroleum industry (QLR3). In light of the aforementioned, respondents from QLR provided useful suggestions that correlate the nature of capacity development programmes in the petroleum industry and the possible effects that capacity development programmes in the workplace could have on socio-economic transformation in the country.

Therefore, the following were captured as the effects of capacity development for petroleum industry and socio-economic transformation in South Africa:

- Capacity development could promote leadership, management, technical and adaptive capacities development in the public or private sectors;
- Capacity development in the petroleum industry could create direct, indirect and induced jobs and increase government revenue;
- Effective capacity development could benefit both the petroleum industry and stakeholders by strengthening trust, building commitment and good relationships in the workplace;
- Capacity development could promote human ability to produce change by empowering individuals, leaders, organisations, and societies with quality skills training programmes that support greater transparency, accountability and a more economic use of capital in the petroleum industry; and
- Capacity development best-practice could cause major opportunities for effective skills use, increase economic activities, and reduce the risks of the petroleum industry being left behind; etc.

6.5.2.3.5 Mixing of QNR and QLR key results related to objective 3: CDPC1.1 to CDPC5.5 and QLR1 to QLR9

In the QNR data collection, respondents were required to indicate how capacity development programmes could contribute to socio-economic transformation in South Africa. The key QNR results are as follow:

- **CDPC5.2** (100%): capacity development programmes could be the engine or locomotive of socio-economic transformation in South Africa by supporting skills training programmes that promote integrity, accountability, trustworthiness, honesty, empathy, loyalty and solidarity in the workplace, whether in the public or in the private sectors;
- **CDPC3.1:** 98.8% of respondents indicated that at a micro-level, the performance of the petroleum industry depends to a large extent on the skills/abilities/competencies development of the workforce;
- **CDPC3.4:** 81.5% of respondents showed interest in that efforts and resources expended towards addressing the triple challenge (poverty, unemployment, and inequality) will be in vain out of capacity development best practice; and
- **CDPC4.2:** 75.8% of respondents decided that research on capacity development programmes could boost the politics of skills development for employment, skills for competitiveness and skills for poverty reduction.

In the QLR data collection, respondents were required to indicate if there were any operational models of capacity development programmes that could contribute to petroleum industry development and socio-economic transformation in South Africa. The key QLR results are as follows:

- There exists a co-function model, which is often used not to deliver education, but to respond to issues of common interest. This model helps to define the problems and find solutions in the petroleum industry (QLR1);

- SAPIA has implemented two programmes to assist employees' capacity development, specifically programmes for women's capacity development in the petroleum industry. Members used to send delegates to the programmes for capacity development (QLR3);
- Service providers of capacity development in the South African petroleum industry are local partners. SAPIA is in partnership with Rhodes University and other corporate universities to develop local worker's capacity (QLR3);
- CHIETA connects organisations in partnership with government and needs to strengthen efforts in terms of improving collaboration for effective human capital capacity development (QLR5);
- On some occasions, we (R2) collaborate with external providers to assist in finding solutions in effort to improve models that contribute to human capital capacity development. In addition, we (R2) develop or improve models of capacity development programmes in cooperation and partnership with academic institutions (QLR2);
- DUT is one of the key providers of skills development in partnership with CHIETA, specifically in the field of chemical engineering. As a provider of capacity development, DUT should continually develop research on how models of capacity development programmes have to contribute to improving people's capacities or skills in the workplace (QLR2);
- The reason for suggesting a new model or improving the existing one depends on various factors, including objectives and current situations or the environment of the organisation. After 5 years, there is an interview which is often conducted in the HR department to find out if the existing model or programmes of human capital capacity development are still workable or need to be reviewed, improved or developed (QLR4);
- Due to some technical challenges, some workers use to go to DUT, MUT and other learning institutions to learn more in relation to their respective fields of

study. Nevertheless, a new model that can address the issue of technical skills development in the workplace could be necessary to respond to the needs of the organisation (QLR4); and

- In terms of production processes, skills providers are South African, but people from PETRONAS (Malaysia's) used to come periodically to train local people when there is necessity aligned to new technology or processing method (QLR5).

6.5.2.3.6 Interpretation and discussion aligned to QNR and QLR results about capacity development programmes' contribution to petroleum industry development and socio-economic transformation in South Africa

This objective was the most predominant in terms of QNR responses. Respondents have shown much interest in the contribution that capacity development programmes could have for petroleum industry development and socio-economic transformation in the country. In the QNR results, this objective scored the highest percentage (CDPC5.2: 100%). For example, respondents agreed that capacity development programmes could be the engine or locomotive of socio-economic transformation in South Africa by supporting skills training programmes that promote integrity, accountability, trustworthiness, honesty, empathy, loyalty, and solidarity in the workplace, whether in the public or in the private sectors. Respondents (98%) similarly indicated that at a micro-level, the performance of the petroleum industry depends not only on the sophisticated technology that can be used to produce quality products and services, but also to a large extent on the skills/abilities/competencies development of the workforce.

Furthermore, as can be observed further above, the QLR results correlate perfectly with the QNR results. For example, from QLR, respondents attested that a new or improved model of capacity development programmes could address the issue of technical skills development in the workplace to contribute and respond to the needs of the organisation (QLR4). SAPIA has put programmes in place to assist employees' capacity development, specifically programmes for women's capacity development in

the petroleum industry: members use to send delegates to the programmes for capacity development (QLR3); and DUT is one of the key providers of skills development in partnership with CHIETA, specifically in the field of chemical engineering. As a provider of capacity development, respondents suggested that DUT should continually develop research on how models of capacity development programmes must contribute to improving people's capacities or skills in the workplace (QLR2). Thus, in the public and private sectors, capacity development programmes can play an important role in terms of policies, programmes, and strategic plans improvement (Smit, 2015); positive human capital capacity development (UNDP Report, 2011: 1-4); increased competitive advantages (African Development Bank Group Report, 2013: 31-42); and improved performance and productivity (Noya, 2009: 2-8/5-8). Briefly, in relation to Figure 6.3, capacity development can contribute to increasing the contribution of the petroleum industry to economic growth and social transformation in the country (Mosala, 2017: 330-332).

6.5.2.3.7 Mixing of QNR and QLR results aligned to objective4: SCDP1.1 to SCDP4.4 and QLR1 to QLR9

In this objective, respondents were required to indicate the extent to which capacity development programmes focussing on skills development have contributed to petroleum industry development and socio-economic transformation in South Africa. The key QNR results are as follow:

- **SCDP1.3:** 89.3% of respondents confirmed that the government and the South African petroleum industry are aware that human capital capacity development could play a crucial role towards promoting the petroleum industry development and socio-economic transformation in the country. However, there could be a lack of policies best practice in the process of implementing an existing framework/model of capacity development that supports technical skills and other scarce skills development in the petroleum industry/country, or there could be a lack of appropriate best practice of capacity development programmes in the workplace;
- **SCDP2.1:** 93.9% of respondents acknowledged that if in some areas/fields of the petroleum industry skills training programmes are effectively and

successfully established and implemented, this might not be the case for the entire petroleum industry. Capacity development programmes are not covering all sub-sectors of the entire South African petroleum industry, given that there are still critical issues related to technical skills shortages, skills waste and the deficit of positive human capital capacity, whether in the oil field or in other socio-economic sectors of the national economy;

- **SCDP2.3:** 95.0% of respondents approved that efforts towards radical socio-economic transformation could be wasted efforts/resources out of human capital capacity/technical skills development and out of capacity development programmes best-practice in the public or private sectors, which is supposed to promote positive human capital capacity development in the workplace or in the country as whole; and
- **SCDP4.4:** 91.6% of respondents indicated that there could be inadequate or insufficient budget/funds supporting the process of technical skills training programmes in the petroleum industry **or** funds are sufficiently available, but inappropriately managed in terms of promoting scarce skills development in the petroleum industry.

In the QLR data collection, respondents were required to indicate what could be the necessary actions that both the petroleum industry and South African government can engage in to improve the contribution of capacity development programmes for the petroleum industry's development and socio-economic transformation. The key QLR results are as follows:

- Capacity development has contributed immensely for both the employed and unemployed people. Some of the unemployed individuals have subsequently managed to get employment opportunities due to capacity development programmes. It has assisted in the creation of job opportunities (QLR8). Capacity development contributed to promoting employees' skills in the workplace, as well as to the increase of their salaries (QLR9).

- The necessary actions that both the South African government and the petroleum industry could put in place for petroleum industry development and socio-economic transformation consists of campaigning in favour of collective enhanced, enriched and boosted awareness about the improvement and best practice of policies, programmes and strategic plans that support structures of capacity development in the workplace, creating a platform that facilitate the promotion of African (black) people to improve their technical skills/capacities and giving them opportunities to emerge competitively in the petroleum industry (QLR3);
- Actions to promote technical skills development must involve institutions like Durban University of Technology (DUT), which is a provider of chemical engineering skills training programmes, which develops people's capacity based on international models/standards (QLR2);
- Adequate Centres of Excellence where skills training programmes are taking place in the petroleum industry or in the country must be improved and developed following the international standards. In most cases, the government organises the training of staff from various venues outside of the department (R1). In some cases, we used to go to an external Centre of skills training programmes and in some other cases, we (R7) used to have skills training in the workplace (QLR7); and
- Partnerships between the government, employers, financial institutions, and providers of skills training programmes could be significant for the purpose of developing the skills of employees in the workplace. Such partnerships must continue to go deeper in line with relevant programmes of technical/scarcce skills development. We (R4) need to improve ourselves in adapting the business to a successful international model/standard. Improving and increasing partnerships between employers in supporting capacity development programmes in the workplace could solve the issue of skills shortages which affects the petroleum industry currently (QLR4).

6.5.2.3.8 Interpretation and discussion of QNR and QLR results aligned to the extent to which capacity development programmes focussing on skills development has contributed to petroleum industry development and socio-economic transformation in South Africa

The QNR and QLR results displayed further above illustrate a significant correlation. However, respondents in the QLR provided moderated opinions. In some cases, respondents acknowledged that sessions of skills training programmes were successful, while others have suggested more improvement and the development of centres of excellence for technical skills development. For example, respondents revealed that capacity development is under-utilised in sub-sectors of the petroleum industry as it is regarded to be secondary to bottom-line achievements (QLR8). In addition, the existing technical and other scarce skills shortages in the petroleum industry indicate that despite the progress and success in some area of skills development, there is a requirement for more awareness, efforts, and resources for the development of a model of capacity development that will assist to promote holistic programmes of capacity development in the petroleum industry.

Respondents suggested that capacity development programmes in the workplace should include functional, technical, and behavioural skills programmes and not be selective in some specific areas only. Therefore, as stated further above, certain respondents argued that in some fields, skills training programmes are successfully provided, but in many other fields where scarce skills are highly required, more efforts are still necessary for technical capacity development programmes in the petroleum industry (QLR1). Respondents further postulate that successful training programmes most often depend on organisational or individual goals in terms of motivations based on the field of study and the quality of programmes to be provided (QLR4). This depends on the area of skills training programmes, but generally, there has been satisfaction in terms of skills training programmes (QLR3).

Thus, respondents concluded that human capital capacity is a strategic resource in the petroleum industry. Most oil companies impose skills development which results in improved performances that are good (QLR6) and capacity development programmes have improved most employees' confidence in their various tasks in the workplace (QLR8). In this objective, respondents recommended the following:

- The industry should develop more partnerships with international providers in terms of developing specific skills related to technological advancement. It is also my desire to participate in training programmes from other world regions (QLR1).
- There is satisfaction in terms of skills development, but the industry has to do more, integrate students into training programmes, improve internship programmes and promote a model of skills training programmes that is flexible for capacity development in the workplace (QLR4).
- There is no existing centre of excellence similar to those in the USA, France or Europe as we do not have yet that standard in the country. There is need to build and develop an African Centre of Excellence that could facilitate in developing African capacities, using several programmes of technical skills development (QLR5). Each of the following organisations: SASOL, SAPREF, ENGEN have a skills training Centre, but these centres need to be well equipped and upgraded (QLR1).

6.5.2.3.9 Mixing and interpretation of QNR and QLR results linked to objective5: CCDP1.1 to CCDP5.3 and QLR1 to QLR9

In this objective, in relation with the QNR data collection, respondents were required to identify the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry. The key QNR results are as follows:

- **CCDP1.3:** 83.4% of respondents revealed that the lack of policies best practice in supporting capacity development programmes could be one of the key barriers affecting technical skills development in the petroleum industry;
- **CCDP 2.1:** 90.5% of respondents indicated that technical skills shortages in the petroleum industry could be related to the lack of capacity development programmes best-practice;

- **CCDP2.2:** 91.7% of respondents acknowledged that the petroleum industry is not fully addressing and supporting capacity development programmes as a tool that stimulates human capital capacity development in the workplace;
- **CCDP2.3:** 92.1% of respondents agreed that technical skills shortages in the petroleum industry are a result of neglecting or lacking an appropriate model of capacity development as a vital tool to employees' technical skills development; and
- **CCDP5.1:** 92.8% of respondents recommended that capacity development programmes need to be sufficiently explored, promoted, and applied in strengthening the abilities of employees in the petroleum industry.

In the QLR data collection, respondents were required to indicate what the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry could be. The key QLR results are as follows:

- In South Africa, we are good in developing policies or strategies in any socio-economic sector, but the best practice or implementation can be delayed because of various constraints, including financial delays (QLR1). One of the challenges to capacity development programmes implementation in the South African petroleum industry is the cost and delay in supporting service providers: Processing of payment is very slow and takes much longer than expected a year or more (QLR5);
- The petroleum industry is experiencing a severe loss of experts that are leaving the country for better conditions in other world regions (QLR2). The lack of awareness, policies best-practice and motivation (some employees are lazy: QRL6) to ensure the development and retention of technical skilled employees and a lack of monitoring with necessary effects are amongst barriers that obstruct the process of effectively implementing capacity development programmes in the petroleum industry (QLR1);

- Challenges affecting the best practice or implementation of capacity development in the petroleum industry are mostly related to the time-frames for trainees who have to manage to be in class and at work at the same time. Some training skills take long (9 months) and amongst the trainees, there are married people who cannot cope with skills programmes that take long (QLR6). In some cases, there are some workers who are not interested in skills training programmes. For example, supervisors and management mostly do not show interest in attending skills training programmes in the workplace (QLR8);
- Worksite access for interns is also a challenge (QLR9); Capacity development is not cheap, but expensive: a year programmes can cost approximately R 140,000 (QLR5: year 2019). The process for funding management towards supporting service providers of capacity development is still an issue for many partners or organisations as they take a lot of time to make available the fund for employees' capacity development (QLR3).
- Limited availability of funds to implement capacity development programmes and the unnecessary bureaucracy that might exist within the sector are amongst the challenges affecting the best practice of capacity development programmes in the South African petroleum industry (QLR8).

6.5.2.3.10 Interpretation and discussion of QNR and QLR results aligned to the potential challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry

The comparison of the QNR and QLR results in this objective indicates an important correlation. Respondents acknowledged that there could be various challenges affecting the best practice of capacity development programmes in the South African petroleum industry. In summary, according to respondents' views and opinions, the mixed challenges affecting the best practice of capacity development programmes in the petroleum industry include:

- The lack of awareness of policies best-practice in supporting capacity development programmes for technical skills development in the petroleum industry;
- The petroleum industry is not fully addressing and supporting capacity development programmes as a tool that stimulates human capital capacity development in the workplace;
- The lack of appropriate models of capacity development as a vital tool for employees' technical skills development;
- Capacity development programmes need to be (are not) sufficiently explored, promoted and applied to strengthening the abilities of employees in the petroleum industry;
- Implementation can be delayed because of various constraints, including financial delays;
- Capacity development is not cheap (it is costly): a year programmes can cost approximately R 140,000. The cost and delay in supporting service providers, including the processing of payment, is very slow and takes much longer than expected a year or more. In addition, the process for funding management to supporting service providers of capacity development is still an issue for many partners or organisations as they take a lot of time to make available the fund for employees' capacity development. Worksite access for interns is also a challenge;
- Technical skills drain: the petroleum industry is experiencing a severe loss of experts (technical skills shortages) who are leaving the country for better conditions in other world regions due to the lack of motivation and retention as well as the lack of policy improvement and best practice in the petroleum industry. The lack of monitoring the technical skills drain with necessary effects are amongst barriers that obstruct the process of implementing effective capacity development programmes in the petroleum industry;

- The time frame for trainees who have to manage to be in class and at work at the same time is a challenge for many employees. Some training skills take long (9 months) and amongst the trainees, there are married people who cannot cope with long-distance skills training programmes that take much time. In some cases, workers are not interested in skills training programmes. For example, supervisors and managers mostly do not show interests in attending attend skills training programmes in the workplace. Some employees are lazy to participate in skills training programmes; and
- Limited availability of funds to implement capacity development programmes and the unnecessary bureaucracy within the sector are amongst the challenges affecting the best practice of capacity development programmes in the South African petroleum industry, etc.

In light of the aforementioned challenges, respondents indicated and suggested that challenges exist, but there should be a very dynamic approach in dealing with them straight away. Capacity development programmes are important in that they contribute to sharing innovative ideas with fellow employees in the workplace and improve and develop the ability of workers to share ideas that promote the organisation. Furthermore, respondents indicated that being away from work and leaving work for outdoor training programmes is a challenge as a greater workload is to be managed thereafter.

Therefore, they suggested that workshops and training programmes provided indoor or in the workplace could be effective, feasible and much easier to manage. Moreover, respondents require that local providers of capacity development must update their skills training programmes because it was found that a session of skills training programmes was uninteresting/boring due to already known information. For example, one of the respondents indicated that: *I participated in the skills training programmes just for a certificate, there was no new information; the provider/lecturer was not good enough about required and expected information* (QLR2).

This implies that companies in the petroleum industry should emphasise quality partnerships with local providers of skills training programmes and develop a model of

partnerships with skills training providers based on pre-determined conditions and criteria. For example, local providers of capacity development programmes in partnership with CHIETA and SAPIA in terms of multi-skills development in the workplace should include accredited or qualify public and private academic institutions such as DUT, UKZN, MUT, etc. They should be required to provide innovative and creative information to trainees in terms of skills development in the workplace.

Thus, an in-depth research study should be undertaken to identify additional challenges/barriers related to capacity development interventions in the petroleum industry towards promoting employee's commitment to capacity development programmes in the workplace and to develop an appropriate model of capacity development programmes that accommodates employees' time availability to participate in workshops and training programmes, whether indoor or outdoor. Funding to support employees who would like to improve or increase their level of education in various academic institutions should be arranged or made available in the correct period of time.

6.5.2.3.11 Mixing and interpretation of QNR and QLR results aligned to objective6: IMCD1.1 to IMCD5.2 and QLR1 to QLR9

In this objective, respondents were required to respond and indicate/identify the international models of capacity development programmes that could promote human capital capacity development, petroleum industry development and socio-economic transformation. The key QNR results are as follows:

- **IMCD3.1:** 79.2% of respondents agreed that an improved capacity development model/framework based on the international one could have a sound impact in terms of promoting the petroleum industry value-chain activities such as crude oil, head office, refinery, distribution, storage, wholesale and retail activities upgrading;
- **IMCD3.2:** 86.4% of respondents approved that an international model of capacity development could have a positive influence on the development of local human capital capacity in various other related industries;

- **IMCD4.1:** 84.1 % of respondents were favourable in that capacity development models could be used as a reference for the way in which the petroleum industry may evaluate capacity development services in terms of skills acquisition and usage from the providers of capacity development programmes; and
- **IMCD5.1:** 82.0% of respondents confirmed that the South African petroleum industry would need an appropriate framework/model of capacity development that may be similar to developed petroleum industries from other world regions for the reason of competitive advantages.

In the QLR data collection, respondents were required to indicate if international models of capacity development programmes could be used as a reference to improve local models of human capital capacity development in the petroleum industry. In addition, respondents were required to indicate if there was any cooperation between local and international facilitators of capacity development programmes that are supporting the training of local trainers in the South African petroleum industry? If yes, was there any satisfaction from such cooperation in terms of human capital capacity (technical skills) development in the petroleum industry?

The Key QLR results in this objective are as follow:

- Yes, interest from new ideas/information that can come from various international people can be profitable to support local human capital capacity development in the workplace (QLR2).
- No, international models of capacity development programmes cannot be used as a reference because they have different objectives. For example, in South Africa we are not ready to use self-services in certain fields of socio-economic activities (QLR1).
- Yes, international models of capacity development programmes can be used as a reference to improve local models of human capital capacity development in the petroleum industry (QLR4).

- Yes, there is cooperation with Malaysia's facilitators of capacity development programmes which support the training of local workers (QLR9/Engen refinery). People from Malaysia used to come with their own model of capacity development programmes and train local workers using their culture on how things should be done (QLR9).

- India has a good model of capacity development. We can adapt that model to local reality or need for human capital capacity development. Yes, there can be various benefits if an organisation can use or adapt an international model of capacity development programmes in line with it-defined objectives for productivity, innovation, and competitiveness (QLR5).

- Yes, cooperation through organisations on the continent and from different other continents exists in terms of facilitating capacity development programmes and training of local people. However, such cooperation needs to be reviewed, improved, and developed in line with continental requirements for socio-economic activities development (QLR7).

- Any international facilitation of capacity development programmes could help in the training process of local trainers in South Africa, but I am not aware of any existing international cooperation that facilitates human capital capacity development in the country (QLR2).

6.5.2.3.12 Interpretation and discussion of QNR and QLR results about the role international models of capacity development programmes could play in supporting human capital capacity development for petroleum industry development and socio-economic transformation

In this objective, the QLR explains the QNR results well. There is a significant correlation. However, from the QLR reactions, respondents have shown different opinions and views concerning the role that international model could play as reference to improve local models of human capital capacity development in the petroleum industry. Some of the respondents have disagreed on international models

of capacity development programmes to be used as reference because they have different goals and objectives to those of local organisations. For example, in South Africa, the industry is not ready to use self-services in certain fields of socio-economic activities (QLR1).

Nevertheless, there was a high level of agreement from QNR and QLR in that international model of capacity development programmes could be used as reference to improve local models of human capital capacity development in the petroleum industry (QLR4, QLR2, QLR5 and QLR7). The practical examples of India and Malaysia indicated further above support those who believe that international models of capacity development programmes could contribute to promoting local human capital capacity development. Therefore, respondents attested that people from Malaysia developed their own model of capacity development programmes and trained local workers using their culture on how things should be done (QLR9).

In addition, cooperation with Malaysia's model of capacity development programmes has been successful in supporting the training of local workers (QLR9/Engen refinery). Furthermore, respondents argued that India has a good model of capacity development. South Africa can adapt that model to local reality or requirements for human capital capacity development. There could be various benefits if an organisation can use or adapt an international model of capacity development programmes in line with its defined objectives for productivity, innovation, and competitiveness (QLR5). In light of the aforementioned, the disagreement of respondents in terms of using international models of capacity as a reference to develop local human capital capacity could mean that local models should be improved, developed and evaluated against international benchmarks/standards (QLR7). Models of capacity development programmes could be useful to assist RSA to be on the same level, benchmark, or standard with international industries (QLR6). Moreover, international models of capacity development programmes could assist South Africa by saving costs on research on how to bridge the gap of technical skills shortages simply by adapting objectively to a model of skills development that can facilitate upskilling the local workforce. Respondents suggested that international models of capacity development could contribute towards the promotion of the South African petroleum industry in upskilling the current workforce (QLR8). More

suggestions from respondents in relation to international capacity development models' role for local human capital capacity development are as follows:

- An improved model can be useful but not necessary because in many cases, public or private organisations are not paying much attention to the real needs of the industry. A new or improved model of capacity development programmes must focus on the impacts over the objectives of the industry (QLR3);
- Models of capacity development programmes could contribute to improving and increasing the experience of local employees in terms of technical skills development in the workplace. Access to particular programmes of capacity development gives opportunities to people to become able to serve their organisations and countries (QLR5);
- Any fruitful cooperation with international facilitators of capacity development programmes can support the training of local trainers in terms of improving local skills development models in the petroleum industry (QLR8);
- Models of capacity development must assist to develop mechanisms that contribute in supporting and retaining local expert workers (scarce technical skills) within the organisation and the country (QLR2); and
- Continuous reviews of local skills training programmes models could be useful in supporting and facilitating technical skills development in the petroleum industry (QLR1).

Respondents have also recommended that the Department of Energy as a whole, and particularly the petroleum industry sub-sector, should consider the requirement of an improved model of capacity development programmes that can increase people's ability/skills, as well as transparency, effectiveness, and efficiency in the workplace (QLR3). Local models should be flexible in addressing the need for scarce skills development (QLR4) and adapting itself to the objectives and expectations of the petroleum industry (QLR5).

Finally, respondents acknowledged that there is an annual or 6-month programmes that comes around often once a year to develop the skills of employees in the Energy

sector (QLR2), and that there is a model called PRALS (which is a system) in the Energy sector that promotes employees' capacity development in the workplace (QLR3). In conclusion, respondents advised that more efforts and resources would be required to improve existing models of capacity development programmes in the Energy sector and to promote awareness campaigns that encourage employees' participation in skills training programmes in the workplace.

6.5.2.3.13 Mixing and interpretation of QNR and QLR results aligned to ACDM1.1 to ACDM5.3 and QLR1 to QL9

This section emphasises the development of an appropriate model of capacity development aligned to human capital capacity development for petroleum industry development and socio-economic transformation in South Africa. Therefore, in this objective, respondents were required to indicate their views and opinions about the CDP-PUSH-Effects model, which is suggested by the researcher as an approach towards bridging the gaps of technical skills shortages, skills waste, and the deficit of positive human capital capacity, whether in the public or in the private sectors. However, the Key QNR results are as follows:

- **ACDM2.1:** 73.7% of respondents declared that the CDP-PUSH-Effects model (suggested by the researcher in this study) could facilitate local and international experts on capacity development programmes to work together to reinforce an active partnership between government's Department of Energy, financial institutions, the petroleum industry, skills training programme providers and many more to imperatively improve/develop and ensure the best practice of models of capacity development that promote technical skills (scarce skills) development in the workplace, as well as to supporting/financing related capacity development programme activities in the South African petroleum industry;
- **ACDM2.2:** 81.1% of respondents approved that the CDP-PUSH-Effects model could facilitate, assist and guide local experts of capacity development programmes to produce/generate results that could be similar to those seen in developed petroleum industries in terms of technical skills or scarce skills development in the South African petroleum industry;

- **ACDM4.1:** 79.4% of respondents agreed that the CDP-PUSH-Effects model could facilitate and generate greater opportunities in training and transferring technical skills (knowledge) based on petroleum industry requirements for human capital capacity development in areas of skills shortages; and
- **ACDM4.3:** 80.6% of respondents approved that the CDP-PUSH-Effects model should be applied to facilitate technical skills and other scarce skills development by taking into consideration employees' specific skills background and the experience gained in the workplace.

In the QLR data collection, respondents were required to indicate if an improved or developed model of capacity development could be one of the appropriate approaches in tackling the issue of technical skills shortages in the petroleum industry. Alternatively, they were also required to indicate if they could agree to adopt and use an improved or developed model of capacity development programmes, such as the CDP-PUSH-Effects model, in supporting technical skills development in the South African petroleum industry. The key QLR results are as follow:

- An improved or developed model of capacity development programmes could be essential to bridge the gap of existing technical skills shortages in the petroleum industry (QLR4). It can promote scarce skills development, increased productivity and competitiveness whether in the public or private sectors (QLR5);
- Positively, it can be agreed that an improved or developed model of capacity development programmes could be a strategic approach in tackling skills shortages or developing scarce skills in the petroleum industry, or in the country as a whole (QLR2);
- The petroleum industry may possibly support a model of capacity development that promotes scarce skills development, but a such model must be flexible and efficient to respond to the sector's needs (QLR8);

- Capacity development models need to be continually explored and improved in line with new experience, opportunities, and requirements for organisational development. A model such as the CDP-PUSH-Effects, if well studied and implemented, could assist in addressing organisational needs for scarce skills development. A developed model could be profitable in terms of boosting human capital capacity and contributing to increased organisational productivity and performance (QLR4);
- The CDP-PUSH-Effects model can help for example, in facilitating partnerships between the Energy Department with universities and colleges towards developing training or workshop programmes that could assist and prepare students to come into the world of work (QLR1). The department of Energy provides training programmes to employees, but an improved approach will make it more efficient and effective for employees' performance improvement in the workplace (QLR3); and
- Entrepreneurship development and Job creation could be one of the outcomes of an innovative model that supports human capital capacity development in the petroleum industry or in the country (QLR4).

6.5.2.3.14 Interpretation and discussion of QNR and QLR about the development of an appropriate capacity development model aligned to human capital capacity development for the South African petroleum industry's development and socio-economic transformation

In light of the aforementioned, respondents acknowledged that an improved and developed model of capacity development programmes in the petroleum industry could be a key approach to bridge the gap of technical skills shortages or for the development of scarce skills. In the QNR, respondents indicated by a majority that the CDP-PUSH-Effects model, if well implemented, could facilitate, and generate greater opportunities in training and transferring technical skills (knowledge), based on petroleum industry requirements or needs for capacity development in areas of skills shortages.

In the QLR, respondents approved positively that it can be agreed upon that an improved or developed model of capacity development programmes could be a strategic approach in tackling skills shortages or developing scarce skills in the petroleum industry or in the country as a whole. Lastly, respondents recognised that capacity development models need to be continually explored and improved in line with new experiences, opportunities, and requirements for organisational development. A model such as the CDP-PUSH-Effects, if well studied and implemented, could assist in addressing organisational needs for scarce skills development. A developed model could be profitable in terms of boosting human capital capacity and contributing to increased organisational productivity and performance.

Thus, it can be confirmed that the correlation between the QNR and QLR in this objective is well established. Accordingly, in this objective, respondents have recommended the following:

- Organisations in the petroleum industry should develop a productive partnership with academic institutions like DUT, as well as improve a model of capacity development programmes that allows working engineers to share their experience with students from Engineering Departments. Moreover, lecturers from academic institutions should develop a viable partnership with petroleum industry organisations to share fresh and new ideas/knowledge with employees in the workplace (QLR4); and
- Experts from the Department of Energy should organise workshops or conferences to share their experiences or knowledge with students from Engineering departments to facilitate and promote knowledge exchange and acquisition between employees and students, and vice versa (QLR2).

In conclusion, respondents in the QLR were required to comment on this current research study and about their possible satisfaction concerning the role that capacity development programmes have played in the petroleum industry. The following comments were made:

- Yes, there could be satisfaction in some area of capacity development, but not in various other fields. Change sometimes comes with the fear to adapt to a new culture or system. Capacity development programmes bring not only change or improvement, but also challenges on how new knowledge/skills should be put in practice (QLR5);
- From experience gained, it can be agreed that workshops, training programmes and dynamic conferences were successful. Therefore, there is satisfaction with the capacity development services provided in the industry, but more resources, efforts and improvement are required to develop an approach that could facilitate skills development in this strategic sector of the national economy (QLR5);
- There is mitigated satisfaction in terms of capacity development programme services provided until now, hence more efforts are required for scarce skills development in the petroleum industry (QLR1);
- Yes, there was satisfaction from local providers or mentors of capacity development, but it is my (R1) desire for the industry to develop more partnerships with international providers in terms of developing specific skills related to technological advancement. It is also my (R1) desire to participate in training programmes from other world regions (QLR1);
- Yes, there is satisfaction in local workers' skills improvement, but more technical skills training is still needed to absorb the shortages that the industry is experiencing (QLR8);
- Yes, due to various interactions, the services provided have been successful. Generally, there was satisfaction in the provision of skills training programmes, but we (R3) are still experiencing some challenges in terms of technical skills development in the industry (QLR3);
- There is a budget settled to improve continuous learning programmes (workshop) in the workplace. There is also satisfaction with the improvement in

job quality and expectations (QLR3). Yes, depends on the area of skills training programmes. Generally, there is satisfaction in terms of skills training programmes (QLR3); and

- Yes, there is satisfaction, but the industry has to do more: integrate students into training programmes, improve internship programmes and promote models of skills training programmes for workers' capacity development in the workplace (QLR4).

6.5.2.3.15 Conclusion

The analysis of data from quantitative and qualitative research applied the computerised PSL-SEM modelling technique and Nvivo12 software package respectively. The convergent mixed methods design was applied as procedures implemented for mixing the QNR and QLR. The comparison, interpretation and discussion of the analysis' outcome followed the procedure defined in Figure 5.3 and were appropriately linked to each objective of this study (Creswell, 2018: 70). Therefore, the procedure consisted of analysing the quantitative strand and the qualitative strand; identifying content areas represented in both datasets and comparing contrasting and/or synthesising the results in the discussion; and interpreting the merged results. Accordingly, in viewing the structure of this chapter, it can be observed that the procedure defined in Figure 5.3 is well fulfilled. Thus, by considering the results of this study, it can be recommended that skills development model and approaches that could bridge the gaps of technical skills shortages, skills waste and the deficit of positive human capital capacity must be improved or developed for change to be perceived in the petroleum industry. Policies that support technical skills development and the retention of employees with scarce skills in the petroleum industry must be improved or developed to ensure the full use and development of human capital capacity in the workplace.

Efforts, awareness, and resources will be required to support models, approaches, and policies best-practice in terms of sustainable positive human capital capacity development in the petroleum industry. The contribution of capacity development programmes for human capital capacity development, petroleum industry

development and socio-economic transformation in South Africa was highly supported by respondents. This implies that capacity development programmes can be considered and applied as an important factor of socio-economic transformation in the country. It can assist organisations in predicting, preventing, and monitoring adverse events or situations deriving from the PESTIE factors' instabilities, as well as creating opportunity for competitive advantages.

The fourth industrial revolution or technological innovation will continually force people into more learning activities with the perspective to improve and develop their skills/talents/capacities/abilities/aptitudes, etc. and consequently to more practice of capacity development programmes in the workplace. Therefore, improved or developed models of skills training programmes in the workplace will also be required. Finally, respondents (QNR= ACDM4.3: 80.6% and QLR3/QLR4) have agreed that the CDP-PUSH-Effects model could be developed as an appropriate approach that could be used in tackling the critical issue of technical skills shortages affecting the South African petroleum industry. Consequently, respondents have shown confidence in that:

- Capacity development programmes could empower people and organisations to produce and develop ideas that give the ability to gain opportunities and minimise the risk of any detrimental threat that can affect the organisation (QLR6);
- Capacity development programmes could assist in growing the country's socio-economic activities by upskilling South Africans (QLR7);
- Capacity development programmes could contribute to improving small and medium enterprises development and facilitating the management of new projects (QLR8);
- Capacity development is a vital key for organisational performance and innovation. It can facilitate or simplify managerial work (QLR5);

- Capacity development could be a catalyst factor of socio-economic transformation through the development of sustainable small business, which will in turn create jobs and help alleviate poverty within society (QLR6);
- Capacity development could contribute to promoting economic growth and supporting productivity improvement, more opportunities for job creation and life-style improvements for many poor people (QLR7);
- Capacity development is power: it is the engine or locomotive of positive human capital capacity development, organisational development, and socio-economic transformation. If it could be applying well in relation with the best practice of policies that support skills development in the workplace, it can also create better opportunities for individuals' development and societal transformation (QLR9); etc.

CHAPTER 7

FORMULATION OF THE POTENTIAL MODEL OF CAPACITY DEVELOPMENT ALIGNED TO TECHNICAL SKILLS DEVELOPMENT AND RETENTION IN THE SOUTH AFRICAN PETROLEUM INDUSTRY: “THE CDP-PUSH-EFFECTS MODEL”

7.1 Introduction

In light of the preceding chapter (six-6), respondents recommended that (ACDP: 55.2%) the CDP-PUSH-Effects model could be developed and applied as an appropriate approach necessary to contribute to human capital capacity development in the South African petroleum industry. Objective seven (7: ACDP) of this study (developing an appropriate capacity development model aligned to human capital capacity development for the South African petroleum industry’s development and socio-economic transformation) scored an average of 78.8% responses from the quantitative analysis outcome. Therefore, based on the respondents’ recommendations, the researcher envisioned developing the CDP-PUSH-Effects model as an approach that could bridge the gap of technical skills shortages; facilitate the retention of technically skilled employees; alleviate the negative effects of skills waste; and promote the development of positive human capital capacity development for the petroleum industry and socio-economic transformation in South Africa.

Additionally, the results of this study showed that 81.1% (ACDM2.2) of respondents were very assertive that the CDP-PUSH-Effects model could guide the petroleum industry’s experts in generating similar results to those seen in developed countries and could be applied as a suitable model to tackling technical skills shortages, facilitating employees’ capacity development and retention in the petroleum industry. Moreover, 80.6% (ACDM4.3) of respondents agreed that developing a model of capacity development in the petroleum industry could reduce dependence on international experts for skills training programmes (international skills programmes providers) and that the best-practice of the CDP-PUSH-Effects model in the petroleum industry could influence policies and goals reforms in terms of employees’ capacity development in the workplace. In addition, 79% (ACDM4.1) of respondents approved

that a capacity development model could indicate the way in which the petroleum industry may evaluate capacity development services in terms of skills acquisition and usage and that the CDP-PUSH-Effects model could create opportunities not only for tackling technical skills shortages, but also for strengthening local workforce capacity development in various socio-economic sectors. Moreover, respondents from the qualitative research confirmed that an improved or developed model of capacity development programmes can be one of the approaches which may help in tackling technical skills shortages or developing scarce skills, whether in the petroleum industry or in other socio-economic sectors (QLR2).

Additionally, from the qualitative results, respondent (QLR8) suggested that the petroleum industry must promote/support a developed model of capacity development that can help scarce skills development and that can be flexible and responsive to the sector needs. Thus, this chapter focuses particularly on the formulation and description of the CDP-PUSH-Effects model, proposed by the researcher in compliance with respondents' opinions and recommendations to improve/develop a model of capacity development programmes that could assist in bridging the gap of technical skills development and promoting the retention of technical skilled employees in the South African petroleum industry. Accordingly, in this chapter, discussions about the CDP-PUSH-Effects model involve three main sections. The *first section* relies on the background of the capacity development model/framework implemented in South Africa, which assisted as groundwork and pillars in the definition and formulation of the CDP-PUSH-Effects model.

The background essentially clarifies the overviews of existing structures, models/approaches that support and promote capacity development programmes in the workplace; the emergence of capacity development programmes in South Africa; the functions/roles and/or objectives of existing skills development structures, which include the Skills Development Act; the National Skills Authority; the Sector Education and Training Authorities; and Learnerships and Apprenticeships. The *second section*, which is directly reliant on the first and third sections, attempts to emphasis the formulation and description of the potential model of capacity development aligned to technical skills development and retention in the South African petroleum industry: "The CDP-PUSH-Effects model". Moreover, the last section discusses the

indispensable or necessary steps aligned to the best practice of the CDP-PUSH-Effects model in the South African petroleum industry.

7.2 PART ONE: BACKGROUND AND OVERVIEW OF STRUCTURES, MODELS AND APPROACHES IMPLEMENTED TO SUPPORTING OR PROMOTING CAPACITY DEVELOPMENT PROGRAMMES IN SOUTH AFRICA

The Human Resources, Science and Technology Department of the African Union Commission, in a collaboration initiative under the joint AU-EU strategy for higher education, defined the overall objective of capacity development programmes which consists of enhancing human capital capacity development in Africa, while strengthening intra-African collaboration (EACEA, 2020). However, the prospective and effective achievement of the AU vision to enhance human capital capacity development in Africa will require a practical and flexible model of capacity development, which must be applied as a strategic tool/approach to achieve the overall objective of the agenda 2063 (EACEA, 2020).

This section explores and examines valuable information used as substantial pillars in the formulation and description of the CDP-PUSH-Effects model, which intends to promote scarce skills (technical skills) development in the South African petroleum industry. Accordingly, most main players of the South African petroleum industry, including SAPIA, CHIETA and the South African Oil and Gas Department, have recognised and explicitly indicated that there exist critical challenges of technical skills shortages in the petroleum industry (SAPIA Report, 2016). They also pointed out a lack of an appropriate plan/model that can promote the development and retention of technical skilled employees in the workplace.

Unfortunately, employees with technical skills are leaving South Africa and the South African petroleum industry for excellent competitive advantages or better working conditions elsewhere around the world (CHIETA Regional Skills Forums – February, 2020). This situation is one of the causes of technical skills shortages in the South African petroleum industry. Therefore, the researcher projected to study and formulate a realistic and flexible model of capacity development that can assist in developing technical skills and ensuring the retention of technical skilled employees in the

workplace. Accordingly, the CDP-PUSH-Effects model is formulated as a workable approach towards supporting technical skills development, the retention of technical skilled employees, as well as the promotion of positive human capital capacity development in the workplace. Moreover, expectations by means of an effective implementation of the CDP-PUSH-Effects model in the petroleum industry may possibly require simultaneously the best practice and improvement of policies, approaches, programmes, and strategic plans that support human capital capacity development in the workplace. The following section discusses the overview of skills development structures in South Africa.

7.2.1 Overview of skills development structures in South Africa

It can be broadly agreed upon that positive human capital capacity deficiency, morale, and ability deficiency for commitment in doing the right things or commitment for excellence, productivity, efficiency, and effectiveness in carrying out creative and inventiveness tasks (see Table 3.4) can generate negative impacts on organisational development and socio-economic transformation. The deficiency of positive human capital capacity and technical skills shortages are alarming situations that display not only a decline or degeneration of the socio-economic transformation process in the country, but also a challenging situation for public and private organisations to contribute to social change and economic growth. Therefore, if nothing is done to bridge the gaps of these critical challenges in the private and public sectors (including the petroleum industry), there will not be any expectations for the possible manifestation/change of socio-economic transformation in the country.

This is because the energy sector and particularly the petroleum industry is one of the key players and major contributors to the South African GDP growth (SAPIA Report, 2016: 27-36). Significantly, it was necessary to explore and understand the challenges affecting structures supporting capacity development programmes in the South African petroleum industry before attempting to formulate and describe a model of capacity development that can contribute to tackling and solving the issue of technical skills shortages. Accordingly, the overview of skills development structures in South Africa permitted to apprehend the origin and causes of technical skills shortages and

the means by which an improved model of capacity development might contribute to promote and develop scarce skills in the South African petroleum industry. However, it is also important to indicate and recognise that South Africa has very dynamic structures of capacity development supporting and promoting employees' skills development in the workplace. Erasmus (2018: 385) and Hammond (2011: 1) stated that South Africa has a dynamic Skills Development Act that defines purpose and provides the understanding of skills development processes in the country. The aim of the South African Skills Development Act 97 of 1998 is to set statutes and structures which intend to develop both national and sector-specific strategies for advancing the skills of the South African workforce and improving productivity within workplaces.

Furthermore, the Skills Development Act provides structures to assist the entry of active workers to the workplace; for training and skills development within the workplace; and to regulate employment services (Erasmus, 2018: 385 and Hammond, 2011: 1). Nevertheless, despite solid skills development structures which provide a thorough guideline for skills development in the workplace, there is still a persistence of technical skills shortages, skills waste, and the deficiency of positive human capital capacity in various public and private organisations. This demonstrates sufficiently that existing capacity development models/frameworks (structures of skills training programmes, policies, and strategic plans) are still meeting or facing critical challenges in the implementation process.

However, the current challenges of technical skills shortages and the deficit of positive human capital capacity make one understand that there is a lack of or low awareness from public and private stakeholders to actively tackle the issue of scarce skills shortages affecting the South African petroleum industry and society. Nevertheless, according to the Department of Higher Education and Training Annual Report (2016/2017: 16) and Hammond (2011: 32-33), in South Africa, structures of skills development and training programmes are managed and coordinated by various organisations that specialise in skills development. According to Hammond (2011: 32-33), these structures include:

I. The Department of Higher Education and Training, which is in charge for:

- Providing a sound Post-School Education and Training steering framework (steer the Post-School Education and Training system through the development and steering mechanisms, integrated planning and implementation oversight);
- Improving Post-School Education and Training services (improve the Post-School Education and Training system through the provision of appropriate learning of assessment services, teaching and learning and student support services);
- Providing Post-School Education and Training capacity (improve the capacity of the Post-School Education and Training system through funding interventions and infrastructure development);
- Developing a strong stakeholder network (develop partnerships and maintain good stakeholder relations in support of an effective Post-School Education and Training system); and
- Ensuring an excellent business operation within the Department of Higher Education and Training (ensure sound business management/leadership and effective resource management within the Department).

II. The National Skills Authority (NSA), which is responsible for:

- Providing advice for the appropriate skills development policy and strategy and structural frameworks for the implementation of the Skills Development Act (SDA); and
- Setting out the objectives to be achieved and the specific indicators to be used for measuring successful implementation; as well as to conduct investigations

on any aspect affecting the Skills Development Act so that it can advise the minister accordingly (Hammond, 2011: 32-33).

III. The Sector Education and Training Authorities (SETAs):

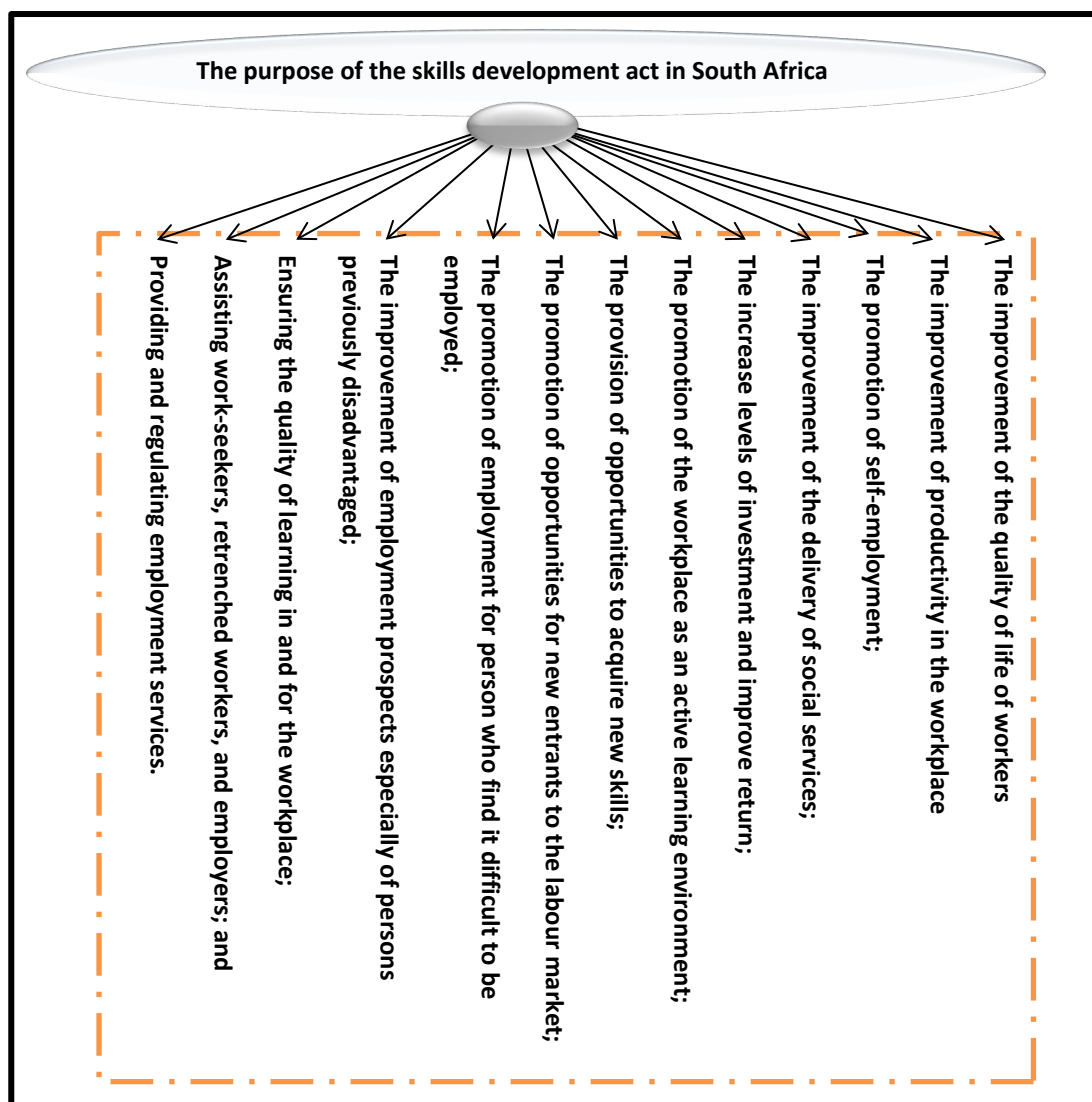
- SETAs are part of the skills development programmes organisations/institutions in South Africa and play a leading role in the implementation of the National Skills Development Strategies (NSDS) (Hammond, 2011: 47).

Moreover, these institutions/structures were established to develop a skilled and productive workforce and to meet the requirements for socio-economic transformation in the country (Hammond, 2011: 12-13). However, despite the role played by these institutions, there are still alarming challenges related to positive human capital capacity deficiency, skills waste, and shortages of technical skills whether in the public or private sector (SAPIA Report, 2012: 5 and CHIETA regional Skills Forums, February 2020). Many evidences related to socio-economic crises in the country, such as unemployment, poverty, inequality, Gender Based Violence (GBV), sexual abuse, corruption, contestation and protestations, etc. are demonstrating sufficiently that the deficit of positive human capital capacity, skills waste and technical skills shortages have devastating impacts on socio-economic activities in the country.

Therefore, efforts from public and private stakeholders should be concentrating on tackling technical skills shortages, skills waste, and the deficit in positive human capital capacity in the same way the government of South Africa and private organisations were powerfully committed to tackling COVID-19, which together are/have destroyed/destroying and affected/affecting socio-economic transformation processes in the country. Therefore, the purpose of improving or developing the structures of skills development in the workplace is to support change through a range of statutes and policies that include the Skills Development Levies Act 9 of 1999 (SDLA), the National Qualifications Framework Act 67 of 2008 (NQFA), the National Skills Development Strategy and the Human Resource Development Strategy. Furthermore, the objective of the range of statutes and policies consisted of ensuring appropriate and available qualifications and of facilitating training delivery within the sector to meet

their share of national priorities. Unfortunately, there seems to be a lack of an appropriate best practice of skills development structures (model/framework) that can address the issue of technical skills shortages, the retention of qualified skilled employees and the development of positive human capital capacity in the petroleum industry. Thus, the statement of purpose of the Skills Development Act in South Africa, which needs to be improved to support and promote human capital capacity development in the workplace is presented in Figure 7.1.

Figure 7.1 The purpose of the Skills Development Act in South Africa



Source: Adapted from Hammond (2011: 13-21)

Figure 7.1 clarifies the purpose of the Skills Development Act in South Africa. Mostly, it illuminates the promotion of the workplace as an active learning environment; the provision of opportunities to acquire new skills; the improvement of employment

prospects, especially of persons (previously) disadvantaged; and ensuring the quality of learning in and for the workplace. Although the purpose of the Skills Development Act is to support structures of skills development in the workplace, studies have revealed that there are still recurrent issues related to technical skills shortages and the lack of capacity development programmes best-practice for job-related skills development of employees in the public and private sectors (Machika, 2014: 4). Therefore, whether at the managerial or lower levels of operations, these challenges are having negative impacts on the job-related skills development of employees. Consequently, the lack of an appropriate and best-practice model for effective human capital capacity development and ineffective/unsuitable skills training programmes in the workplace may continually slow down or hamper the process for scarce skills development in the workplace.

Furthermore, additional factors that are causing skills shortages in the petroleum industry consist of external and internal factors. For example, low/little efforts (little aggressiveness and action) and a lack of genuine awareness to continually promote and support programmes of capacity development interventions; insufficient/limited resource investment for employees' capacity development; workforce's low motivation towards skills development programmes; and insufficient skills training (capacity development) interventions in the petroleum industry are amongst the most prevalent factors (Machika, 2014: 4). Moreover, factors such as limited or unimproved policies, laws, and regulations lack of best practice on immigration systems (immigration laws) may also affect the process of pulling into the country qualified or skilled international candidates ready to bridge the gaps of technical skills shortages, whether in the petroleum industry or in various other sectors of the national economy.

These factors/challenges are critical and need to be considered when planning to improve or develop a model of capacity development that can contribute to closing the gaps of skills shortages in the South African petroleum industry. Thus, it is imperative to shape and improve a model of capacity development through a strong and productive partnership with professional of skills development providers that are experts in equipping/empowering the workforce with the specific required skills/knowledge. Such models may also contribute to the improvement of existing structures and framework of skills development. However, a suitable model of capacity

development should bring together operational partners, including governments, banks, educational institutions, and the petroleum industry (public and private institution) to support and promote scarce skills development in the workplace.

7.2.1.2 Emergence of capacity development programmes in South Africa

The background to the skills development process in South Africa can be comprehended following the understanding of important points related to the emergence of capacity development programmes in the country. Important points include the ratification and starring role of capacity development programmes in South Africa, the skills development approaches used in the South African petroleum industry and the perspectives for technical skills development in the South African petroleum industry. The concept “capacity development” was earlier defined as the process by which individuals, organisations, institutions, and societies develop abilities (individually and collectively) to perform functions, solve problems and set and achieve objectives (UNDP Report, 2008: 8).

Furthermore, the United Way of Calgary and Area Report (2011: 5-6) stated that capacity development can commonly be functional to any organisation, public or private, and non-profit or profit organisations for the reason that capacity development aims to strengthen the ability of an organisation to achieve a desired outcome. According to the OECD Report (2015: 13), an effective model of capacity development or efficient skills development programmes bring together government and private sectors. Moreover, Bloch (2000) emphasised that institutions or organisations require capacity development because it is essentially about promoting the skills/abilities of employees to perform core objectives, to implement successful programmes and to achieve goals in a progressively deepening and sustainable way.

This implies that capacity development programmes must occur within an institutional, organisational, and individual human resource framework that supports and reinforces the different dimensions, which requires commitment on the part of stakeholders and an appropriate partnership between providers and recipients that will support an organisational development approach to capacity development. Therefore, in South Africa, capacity development began and emerged a few years ago after decades of

Apartheid rule which denied African, particularly black people, job and skills development opportunities. According to Bloch (2000), this situation contributed significantly to the negative capacity situation in the country and much concern was immediately raised to analyse institutional, systemic, and other weaknesses inherent in the South African environment. For example, most concerns were related on the need for an appropriate model of capacity development for the effective delivery of goods and services, as well as the need for equipping individuals and institutions with the means to solve their problems and to achieve their delivery objectives. Thus, questions that were raised in relation with capacity development consisted of the following:

- What prevents or obstructs the effective delivery of goods and services?
- How should the South African government go about equipping individuals and institutions with the means to solve their problems and achieve their delivery objectives?

An element of responses to the aforementioned questions could relate to the development and best practice of an appropriate model of capacity development programmes that might assist is equipping individuals and institutions with skills development programmes which provide the means to solve problems and achieve delivery objectively. Therefore, capacity development entered and emerged in South Africa as an Overseas Development Assistance (ODA), being integral to the core challenge confronted by the South African government in reflection to a primary concern related to policy development and in focussing its efforts around effective and efficient delivery (Bloch, 2000). Accordingly, it was in this context that capacity development emerged as one of the central cross-cutting thematic concerns of both the ODA and the South African government.

In addition, Bloch (2000) specified that there was a lack of integration between human resource development and strategic and operational planning functions. Management capacity at the Top, Middle and Lower levels was a significant problem which has had a negative impact on performance. Therefore, performance improvement has required a successful implementation of policies, which in turn necessitated capacity

development programmes, but which have in turn been relatively deficient and fragmented in the South African context. The requirement of ODA for capacity development in South Africa was aligned with the developmental and other needs of the government. According to Bloch (2000), the quality of capacity development programmes/interventions and implementation was affected by four important factors, including:

- Donor strategies, capacities and systems in respect of capacity development;
- Government capacity needs and systems;
- The nature of partnerships established between donors and government for the purpose of implementing capacity development interventions; and
- The form assumed by capacity development interventions.

In light of the aforementioned, one of the targeted aims of ODA for capacity development consisted of providing access to specialised skills and knowledge. Unfortunately, a lack of co-ordination and overall vision amongst donors, as well as a lack of criteria and standards by which donors supported and assessed capacity development programmes were indicated. Therefore, during the emerging period of capacity development programmes, it was revealed that the concept “Capacity development” was used in a very ambiguous, unclear and/or vague way. Consequently, these problems underpinned the fragmentation and dispersal of many learning experiences. In addition, a lack of an appropriate model of capacity development assistance was also observed, which led to poor capacity interventions within the donor community itself to respond to capacity development challenges (Bloch, 2000). Moreover, Table 7.1 indicates some of the factors that contributed to the lack of appropriate capacity development models, which has its roots in various causal levels.

Table 7.1 Various causal levels that contributed to the lack of appropriate models of capacity development in South Africa

❖ Various donor systems and practices exerted a negative influence on capacity development;
❖ There was a lack of practical model, tools, methods and standards, etc. for translating capacity development policy into the realm of good practice;
❖ Policy frameworks themselves tended to be vague, loose and lacking in rigour;
❖ There was a lack of both internal and inter-institutional debate within the donor sector around capacity development;
❖ Correspondingly, results were loosely defined, due to inappropriate and ineffective capacity development initiatives.

Source: Adapted from Bloch (2000)

Table 7.1 illustrates some causal levels or factors that contributed to the lack of appropriate models of capacity development during the emerging period of capacity development introduction in South Africa. Currently, challenges affecting the South African petroleum industry's development and socio-economic transformation process are aligned to the lack of best-practice and improvement of existing policies/tools/models, methods, and standards for translating capacity development policy into the realm of good practice. In addition, a policy framework that is lacking in best-practice and rigour could be amongst the key critical challenges affecting technical skills development in the South African petroleum industry sector.

Therefore, capacity development interventions for technical skills development in the petroleum industry will require a model of capacity development that includes and promotes an awareness campaign for scarce skills development, which must also stimulate public or private stakeholders' involvement in capacity development processes in the workplace. Thus, the emergence of capacity development programmes in South Africa involved a dual responsibility in terms of ineffective capacity development practice (Bloch, 2000). Therefore, responsibility included the following factors.

- On one hand, there was poor capacity within the donor community itself to respond to the capacity development challenge (e.g. various donor systems

and practices applied a negative influence on capacity development and there was a lack of practical tools, methods and standards for translating capacity development policy into the realm of good practice); and

- On the other hand, the government has failed to establish a viable institutional centre to promote and support capacity development programmes across the board at national, provincial, and local levels, leaving departments to the confusion along as best they can.

Additionally, it was also observed that during the emergence period of capacity development programmes in South Africa, the response within government at a national level to capacity development challenges has reflected, rather than transformed, the core problems. The government's ability to utilise donor funds effectively and efficiently in the field of capacity development was very low. Consequently, it was imperative to suggest an excellent capacity development programme model, which should promote people's inventiveness/initiatives at all levels of public and private institutions in facing these aforementioned challenges.

Currently, bringing up the issues of technical skills shortages, skills waste and positive human capital capacity deficiencies affecting public and private organisations, as well as the socio-economic transformation process in South Africa, it was essential to study and develop a model of capacity development programmes that can responsively address and deal with critical skills issues. Therefore, in the public or private sectors, an improved or developed model of capacity development programmes must keep on being a vital tool for organisational performance, change and transformation at all levels of socio-economic activities.

7.2.1.3 Understanding the ratification and starring role of a capacity development programmes model in South Africa

In South Africa, the ratification and starring role of capacity development programmes are defined by the Skills Development Act No. 97 of 1998, which suggests that organisational frameworks have to accommodate workplace skills development programmes, policies and strategies that promote human capacity development

(Republic of South Africa: National Qualification Framework Report, 2012: 1). In various other African countries, frameworks and legislation that promote skills development in the workplace may also exist. Unfortunately, in most cases, organisations and institutions are failing to accommodate and implement frameworks that support human capital capacity development. In furthermost cases, laws and regulations are powerlessly implemented in Africa, and there is inadequate financial capital capacity to support programmes of human capital capacity development in the workplace.

Therefore, challenges aligned to the best practice of capacity development models in the workplace are many. Unfortunately, in Africa, efforts that should contribute to developing a model of capacity development for human capital capacity development are wasted in celebrating commemorative and historical dates (such as Freedom Day) and many other special days, while a majority of people that are celebrating these commemorative dates are experiencing severe socio-economic challenges. For example, most people in Africa have limited access to capacity development and consequently to the satisfaction of basic socio-economic needs. Poverty, inequality, unemployment, limited technical skills development, national and regional conflicts (armed conflicts in African countries), as well as political and socio-economic deprivation are factors, amongst several others, which sufficiently indicate that people in Africa are lacking the necessary “capacity” to transform socio-economic opportunities into socio-economic wellbeing for all.

Once again, existing provisional and constitutional acts that support socio-economic activities development are powerlessly and inappropriately implemented in Africa. In other words, in Africa, countries which are constitutionally and democratically free are not yet socially and economically very free because people are still lacking capacities to be socially and economically free. All over Africa, the majority of people, who are lacking skills/capacities, are enduring and suffering similar socio-economic challenges. Thus, the lack of capacity development best-practice on the continent can be associated with the lack of awareness campaigns for capacity development; powerless best-practice of constitutional laws; and inadequate financial capacity to support human capital capacity development in the workplace. This also implies that people with less capacity, living under the influence of poverty, unemployment and

inequality are also exposed to “adverse or negative capacities” (human capital capacity deficiency), which unfortunately drives them to develop unconscious, unlawful, illegal, criminal, harmful and dishonest practices. Consequently, the lack of capacity development programmes to support unemployed and poor people in the country can result in the increase of socio-economic crises such as corruption and immorality trends in different levels of society and spheres of life. Thus, it can be asserted/acknowledged that on the African continent, various crises affecting socio-economic transformation could be mainly associated to positive human capital capacity deficiency (lack of recurrent technical, functional, and behavioural capacities development).

Accordingly, capacity development programmes empower people to become socio-economically active, valuable, and convenient (suitable). Moreover, they provide people with abilities/skills/capacities to transform challenges into opportunities that make them become more innovative and creative. However, policies and strategies improvement/development for capacity development programmes best-practice in the workplace must line up with existing criteria and models/frameworks of skills development. Moreover, in South Africa, the Skills Development Act (Act No. 97 of 1998) stands in line with the National Skills Development Strategy (NSDS) and decentralises this strategy to each Sector Education and Training Authority (SETA) in meeting the skills requirements of each sector (Machika, 2014: 1).

Therefore, despite challenges related to the lack of capacity development best-practice and technical skills shortages in the South African public and private sectors, capacity development programmes in South Africa are backed by solid structures that support a skilled, semi-skilled and knowledge-based workforce in offering the public quality services (Mohapi, 2011: 3). Therefore, it is important to indicate that capacity development programmes’ role must not be limited to skills training programmes simply, but most importantly to explore areas related to organisational and institutional policy improvement for human capital capacity development in the workplace. In light of the aforementioned, Machika (2014: 1) and other scholars and institutions such as the Framework Development Task Force (1996: 2); Stavros (1998: 42); Soanes and Stevenson (2008: 207); and Hartwig (2010: 23), have provided an essential understanding about the role capacity development can play in achieving institutional

and organisational goals. From their point of view, it was agreed that capacity development empowers individuals or groups of individuals, organisations, and institutions with the ability to improve human, financial, technological, and technical resources. Furthermore, other scholars including Eade (1997: 24); Alaerts (1999:81); Breen et al., (2004: 429); Shole: (2007: 7); Plummer, (2012: 6); Awefeso, (2012: 263) and Machika (2014:1) have emphasised the role of capacity development for institutional, organisational, and socio-economic transformation in any country.

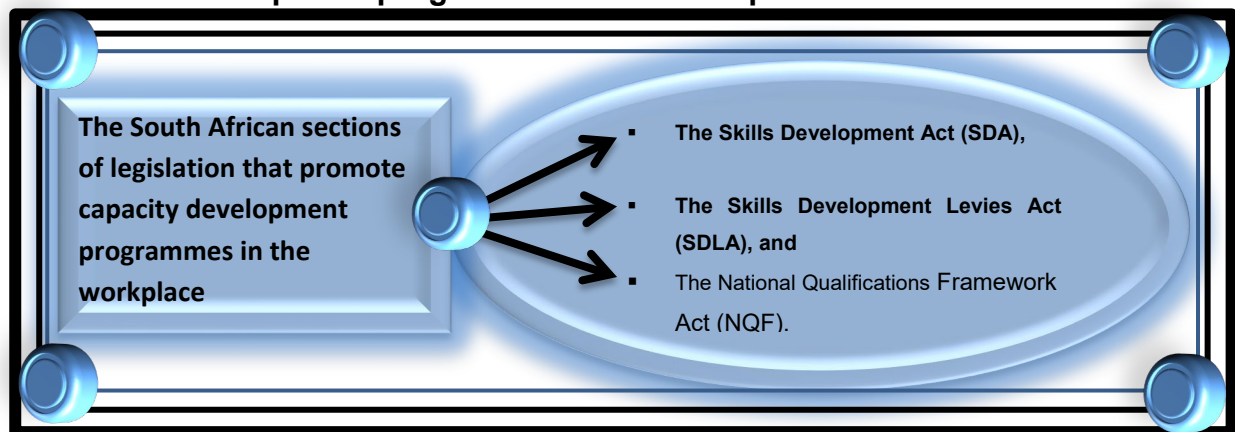
They also supported ideas that promote an inclusive practice that facilitates change from individual to organisational/institutional improvement through enhanced knowledge/skills and improved perspectives. Furthermore, these scholars posited that organisational goal achievement can be feasibly and possibly done from improving the working condition (performance) of employees through a workable model of skills development programmes or workplace skills development plans offered within public and private service departments (Aswathappa, 1997: 194 and Erasmus et al., 2004: 459). Thus, in light of the aforementioned and in the context of technical skills development for petroleum industry performance and socio-economic transformation in South Africa, an improved or developed model of capacity development interventions need to be implemented as an aggressive, reactive, proactive and active approach to promoting human capital capacity development in the petroleum industry.

7.2.1.4 Understanding skills development approaches/models implemented in the South African petroleum industry

Earlier, it was remarkably indicated that training skills development programmes in South Africa are held up by solid structures that address and assist the entry of employee into the workplace for training and skills development within the workplace, as well as to regulate employment services. Therefore, approaches to skills development in the workplace included learnerships, apprenticeship, skills training programmes and other prescribed learning programmes which involve a structured work experience component, structured education, and skills development (Hammond, 2011: 10). In addition, an apprenticeship involves working under the guidance of a qualified artisan in the workplace, while a learnership is a formal programme of structured learning and structured workplace experience which is

regulated by the Skills Development Act (SDA). According to Erasmus (2018: 385), the SDA (No. 97 of 1998) provides mechanisms to improve the low skills in South Africa. Therefore, in supporting the development of low skills, the government of South Africa has promulgated three important pieces of legislation that stimulate the practice of capacity development programmes at the workplace. Figure 7.2 highlights these Acts (Erasmus, 2018: 385).

Figure 7.2 Important pieces of legislation that promote capacity development programmes in the workplace



Source: Adapted from Erasmus (2018: 385)

Figure 7.2 describes key sections of the South African legislation that promote capacity development programmes in the workplace. According to Erasmus (2018: 385), these Acts form part of the National Skills Development Strategy, an advanced approach that targets linking learning to the demands of the world of work; to improve or develop the skills of the existing workforces; and to enable employers to promoting organisational productivity and competitiveness. However, it is necessary to emphasise that there exists a link between the SDA, SDLA and NQF. Therefore, according to Erasmus (2018: 385), the mandate of each of the aforementioned Acts is as follow:

- ❖ The National Qualification Framework Act (NQF): Specifically focuses on the provision of the National Qualification Framework and on the integrated framework where all skills and knowledge outcomes can be registered as unit standards;

- ❖ The Skills Development Act (SDA): Emphasises the promotion of a strategic approach to skills development by creating Sector Educational and Training Authorities (SETAs), Learnerships and skills programmes that are to be assessed against standards and qualification; and
- ❖ The Skills Development Levies Act (SDLA): Enforces a skills development levy on employers and with the Employment Equity Act requires all employers to eliminate unfair discrimination and promote greater representation of black people, including African people, coloured people and Indian people, women, and people with disabilities.

Additionally, Hammond (2011:11) indicated clearly that qualifications at the workplace must be gained by a combination of theoretical study and practical skills development in the workplace, and that learnerships must lead to qualifications which must be registered by the South African Qualification Authority and must be registered with the Department of Labour (DOL) as a learnership. Thus, the description, overview and background of skills development approaches implemented in the country and particularly in the South African petroleum industry provide an understanding of the nature of skills development structures or approaches applied, whether in public or private sectors.

Therefore, because various environmental changes and rapid technological development are taking place, capacity development structures and frameworks are also required to be improved or changed in relation with an increased technical skilled workforce demand and with the business environment's change/evolution/development. However, actually, the demand for quality products and services requires greater usage than before of a qualified/skilled workforce. This implies that the South African legislation that promotes capacity development programmes in the workplace will have to be improved and adapted to the reality of environmental and technological changes or development. On the other hand, legislation that supports capacity development interventions in the workplace must also promote a model backing an aggressive, reactive, proactive, and active capacity development programme for human capital capacity development. Such a model could assist as a preventive and remedial approach to solving the challenges of

positive human capital capacity deficiency, skills waste and technical skills shortages affecting the public and private sectors in South Africa. Therefore, Erasmus (2018: 385-386) specified that in South Africa, the structural framework that supports the process of capacity development programmes in the workplace, which need to upkeep and implement an improved model of capacity development interventions, includes:

- The National Skills Authority;
- The Sector Education and Training Authorities;
- The provincial offices of the department (DOL responsibility);
- Labour centres of the department (DOL responsibility);
- Accredited trade test centres;
- Skills Development Institutes;
- The Quality Council for Trades and Occupations;
- Skills development forum for each province;
- National Artisan Moderation Body;
- Productivity South Africa (DOL responsibility);
- Financial, the National Skills Fund; and
- Skills Development Levy Financing Scheme.

These aforementioned structures are a central part of the skills development process in the workplace and are also fundamental in decision-making in effort to adopt/use an improved model of capacity development interventions in the public and private sectors. For instance, “the CDP-PUSH-Effects model” is proposed by the researcher

as an aggressive, reactive, proactive, and active approach to the South African petroleum industry, aimed at tackling the deficit of positive human capital capacity, skills waste, and technical skills shortages. In addition, the CDP-PUSH-Effects model is suggested as a potential approach to supporting the provision, reasons, functions, roles and/or objectives of technical skills development, as well as promoting existing structures of skills development in the South African petroleum industry. Table 7.2 provides suitable information in line with the reasons, functions, roles and/or objectives of technical skills development supported by existing structures of skills development in South Africa. These structures comprise the Skills Development Act, the National Skills Authority, the Sector Education and Training authorities, Learnerships and apprenticeships, which are expected to continually promote human capital capacity development in the workplace.

Table 7.2 Functions, roles, objectives of South African legislation and imperatives in the petroleum industry

Objectives of the Skills Development Act:	The purpose of the SDA is: ❖ To develop the skills of South African human resource planning; ❖ To increase the levels of investment in education and training in the labour market and to improve the return on investment; ❖ To use the workplace as an active learning environment, to provide employees with the opportunities to acquire new skills and to provides opportunities for new entrants to the labour market to gain work experience; ❖ To employ persons who find it difficult to be employed; ❖ To encourage workers to participate in learning and other training programmes; ❖ To improve the employment prospects of persons previously disadvantaged by unfair discrimination, and to redress those disadvantages through training and education; ❖ To ensure the quality of education and training in and for the workplace; ❖ To help work seekers to find work, retrenched workers to re-enter the labour market and employers to find qualified employees, and ❖ To provide and regulate employment services.

Institutions established by the Act include:	➤ The National Skills Authority; ➤ The National Skills Fund and the Skills development levy grant scheme as stipulated in the Skills Development Levies Act (No. 9 of 1999); ➤ The SETAs; ➤ Labour centres; ➤ The Quality Council for Trade and Occupations (QCTO); ➤ Department of Labour provincial offices; and ➤ The national Artisan Moderating Body.
Functions of the National Skills Authority and SETAs involve:	
The National Skills Authority	Sector Education and Training Authorities (SETAs)
The main functions of the National Skills Authority are: ▪ To advice the Ministry of Labour on a national skills development policy and strategy; ▪ To liaise with SETAs, the national skills development policy and the national skills development strategy; ▪ To report to the Minister on the progress made in the implementation of the national skills development strategy; and ▪ To conduct investigations on any matter arising out of the application of the SDA and to liaise with QCTO.	The most important functions of SETAs amongst various others functions are: ▪ To develop a sector skill, plan within the framework of the national skills development strategy; ▪ To implement its sector-skills plan by establishing learning programmes, approving annual training reports, allocating grants in the prescribed manner to employers, education providers and workers, training providers and workers, and monitoring education and training in the sector; ▪ To promote learning programmes by identifying workplaces for practical work experience, supporting the development of learning materials, improving the facilitation of learning and assisting in the conclusion of learning programmes; ▪ To register learning programmes; and ▪ To liaise with the National Skills Authority on the allocation of grants, skills development policy or strategy, and a sector-skills plan.

Source: Adapted from Erasmus (2018: 386)

Table 7.2 clarifies the objectives of the Skills Development Act and the functions of the National Skills Authority. These objectives of the SDA relate to the purpose of the CDP-PUSH-Effects model's usage in the South African petroleum industry. However, the CDP-PUSH-Effects model intends to acquire efforts and awareness from various

public and private organisations (stakeholders), which must act conscientiously and responsibly to put in place workable programmes, policies, and strategic plans (capacity) that can support the best practice of a skills development model in the workplace.

7.2.1.5 Understanding the perspective of a skills development model for the South African petroleum industry development

The requirement for an improved/developed model of capacity development in the South African petroleum industry must link with the vision, mission, and mandate of the South African Department of Energy. Therefore, the Oil and Gas Sub-Sector department explicitly described that the vision, mission, and mandate stated between the years 2014 to 2025 are as follow (South African Department of Energy Report, 2014):

- To ensure a secure and sustainable provision of energy for socio-economic development;
- To regulate and transform the sector for the provision of secure, sustainable and affordable energy;
- To ensure a transformed and sustainable energy sector with universal access to modern energy carriers for all by 2025; and
- To improve the energy mix by having 30% of clean energy by 2025.

Therefore, linking this vision, mission, and mandate to the CDP-PUSH-Effects model usage in the South African oil and gas industry may require much concern, consisting of the following:

- What skills development model does the petroleum industry intend to use in tackling and bridging the gap in technical skills shortages and how long will implementation take place?

- Can the CDP-PUSH-Effects model be accepted or approved by stakeholders in the South African petroleum industry to contribute towards solving the problem of technical skills shortages and the retention of technically skilled employees who are leaving the South African petroleum industry for better working conditions elsewhere in other world regions (technical skills drain)?

These two concerns are discussed further below. However, there is a sound requirement for stakeholder interventions to improve/develop a model of capacity development programmes in the petroleum industry that must inclusively take into consideration the provision of positive and technical human capital capacity development, as well as the facilitation of the retention of technical skilled employees in the country. Thus, this study aimed to develop the CDP-PUSH-Effects model to facilitate the development of technical skills development and retention in the petroleum industry.

However, the improvement and best practice of plans/programmes and policies/strategies that promote positive human capital capacity development in the petroleum industry are sine qua non conditions prior to implementing any model of capacity development, including the CDP-PUSH-Effect model. In other words, neglecting the best practice of programmes, policies and strategic plans that support the process of human capital capacity development in the workplace could result in the failure of the CDP-PUSH-Effect model's usage, as well as of any other plausible model of capacity development. Therefore, an awareness campaign (workshops, consultations, conference sessions or seminars, etc.) will be necessary to motivate or enthuse stakeholders' (public and private organisations/institutional partnerships) interest/attention for an improved/developed model of capacity development, such as the CDP-PUSH-Effect model, to be examined and adopted for implementation in the petroleum industry.

Thus, firstly, an awareness campaign could be a significant step forward in the process of bridging the gap of technical skills shortages, as well as combating technical skills drainage from the South African petroleum industry. Folsher (2006: 4-5) indicated that efforts were put in place to establish a national skills development infrastructure and skills development model that promotes human capital capacity development in South

Africa. Today, more efforts, awareness and goodwill from stakeholders are still required to improve and promote skills development models, programmes, policies and strategic plans that might contribute or guide the best practice of models that support technical skills development, minimise skills waste and promote positive human capital capacity development in the South African petroleum industry (the CDP-PUSH-Effects model, for example).

Possibly, the best practice of the CDP-PUSH-Effects model may guarantee employees' ability and performance improvement in various arenas of activities and ensure their retention in the country, currently and into the future. This model can also assist public and private organisations to gain competitive advantages from the external environment and improve productivity, as well as the quality of products or services delivery to the community. Thus, in any socio-economic sector, an innovative model of capacity development can create opportunities for organisational competitive advantages, improving employment condition and, performance and increasing organisational productivity by means of bridging the gap of positive human capital capacity deficiency, technical skills shortages, and skills waste.

7.2.1.6 Summary of Part One

Part One focussed on describing the background, emergence, and overview of models of capacity development programmes and skills development structures in South Africa. It also illuminated models/approaches implemented to support and promotes capacity development programmes in South Africa. In addition, the ratification and starring role of capacity development programmes in South Africa; the understanding of skills development approaches implemented in the South African petroleum industry; and the empathetic of skills development programmes perspective for the South African petroleum industry development were examined in this section. Therefore, the lesson apprehended from this section is that more awareness and efforts are required from public and private stakeholders to improve or develop programmes, policies, strategic plans, structures, and models of capacity development that promote scarce skills development in the workplace.

In addition, an appropriate guidance for the best practice of a suitable model of technical skills development is a sine qua non condition for positive human capital capacity development and for the retention of technically skilled people in the petroleum industry. Thus, structures that support/promote technical skills development in the petroleum industry or in any other socio-economic sectors of the economy are required to be improved. For organisational sustainable development and socio-economic transformation processes in the country, capacity development programmes best practice is still a matter that needs to be explored and examined constantly to ensure employees' access and success to teaching, training, or learning resources/programmes that give them opportunities to emerge and improve their conditions in the workplace. The next section, Part Two, focuses on the formulation and description of the potential model for capacity development aligned to the development and retention of technical skills in the South African petroleum industry: "The CDP-PUSH-Effects model".

7.3 PART TWO: FORMULATION AND DESCRIPTION OF THE POTENTIAL MODEL FOR CAPACITY DEVELOPMENT ALIGNED TO THE DEVELOPMENT AND RETENTION OF TECHNICALLY SKILLED EMPLOYEES IN THE SOUTH AFRICAN PETROLEUM INDUSTRY

7.3.1 Introduction

The background and overview of structures, models and approaches of capacity development programmes implemented in South Africa were discussed in Part One of this chapter. The essential motive for referring to the background and overview of structures, models and approaches of capacity development programmes implemented in South Africa was to understand the useful pillars of capacity development that contributed to the formulation of the CDP-PUSH-Effects model. Therefore, pillars explored from the background and overview of skills development structures allowed the researcher to identify useful information, which contributed to designing the CDP-PUSH-Effects model [(Push Strategy + Reactive Approach) + (Pull Strategy + Proactive Approach) + (Big Push Strategy + Active Approach)]. These pillars are discussed in this section. The CDP-PUSH-Effects model is proposed as

reactive, proactive, and active strategies intending to close the gap of technical skills shortages and reinforcing the culture of positive human capital capacity development in the South African petroleum industry. For that reason, it is important to indicate that a workable model of capacity development (such as the CDP-PUSH-Effects model) can assist or empower people to be fully active in command, whether in public or private organisations. This implies that people develop confidence about what to do in the workplace when they have the necessary capacities/abilities/skills and talents to do it.

However, an improved/developed model of capacity development is indispensable where the requirements for change become unavoidable. Therefore, common areas that require an improved or developed model of capacity development programmes, from which organisational change becomes indispensable and where capacity development interventions become necessary for human capital capacity development, are provided in Table 7.3.

Table 7.3 Common areas where an improved model of capacity development interventions becomes necessary and inevitable

Common areas where an improved model of capacity development interventions becomes necessary and where the requirement for change becomes inevitable	Reasons for capacity development interventions
Adaptation to the world economic change	An improved model of capacity development interventions becomes necessary because the world markets impose changes on economic enterprises, which influence currency fluctuations of many countries. The world-market influences positively or negatively the economy of many countries, which has to manage competition. Therefore, only organisations that are fast in developing employees' skills, become flexible and capable of developing competitive new products rapidly and get them to the markets quickly are able to adapt to change in response to competition.
Adaptation to technological change	Capacity development interventions become necessary due to all changes in technology that must be adaptable to organisational structure and to employees within the organisation. Human capital capacity development becomes inevitable because technology attempt to improve productivity and its introduction should not obstruct organisational development. Because technology is rapidly changing, jobs and organisations should adapt to change. Further, sophisticated information technology necessitates capacity development programmes/interventions or skills

Adaptation to social change	training programmes for change. Moreover, due to technological change, many jobs are being reshaped; work teams whose members are multi-skilled and who actively participate in team decision are replacing employees who use to perform specialised routine jobs. New operating methods, equipment and tools will require technical skills development or can replace workers with machines.
	Capacity development interventions become necessary because human resource policies and practices will have to change to attract and keep more diverse workforce. Due to the business environment change worldwide, the workforces of most organisations will have to adapt to major changes due to multicultural environment. Therefore, many organisations are expected to spend large amounts of money on training the workforce to upgrade the skills of their employees.
	Capacity development becomes necessary because in most African countries, including South Africa, political change is one of the major areas of change. Organisations will have continually to invest on capacity development because they have continually to rethink business process and methods to cope with changed workforce, training of skills. New laws, regulations and court decisions will affect organisations through changes from new Labour Relations Act, The employment Equity Act and the re-vamped Basic Conditions of Employment Act.
Adaptation to political change	Capacity development interventions become necessary because changes can take place in any area of the enterprise's structure, which will require employees' skills development in changing departmental responsibilities, span of control, team approaches, job descriptions, compensation systems, combinations of responsibilities, removal or adding of hierarchical layers, more or less procedures, centralisation or decentralisation, modification in flow of work, etc. Capacity development interventions are also necessary when an enterprise's structure require improvement or change. An implementation of new methods in dividing, grouping, and coordinating tasks will require skilled workforce.
Adaptation to organisational structure change	Capacity development interventions are necessary because physical settings should change in a planned manner to adapt to work demands, formal interaction, social needs, and technological change. Capacity development interventions can facilitate change and make the work of employees easier to perform.
Adaptation to physical setting change	Employees' cultures need to change or upgrade their abilities/capacities/skills to work more effectively and efficiently. Therefore, employees' attitudes, skills, perceptions, expectations, and behaviours will have to adapt to change.
Adaptation to employees' culture change or skills development	

Source: Adapted from Smit (2016)

Table 7.3 denotes that the adaptation to change due to environment transformation will necessarily require an appropriate model of capacity development that can secure and promote people's capacities development in the workplace. In other words, limited human capital capacity operating within a limited environment can engender/cause limitations/barriers to organisational development and societal transformation.

Therefore, a fitting/suitable model of capacity development can assist to close the gap of skills shortages and limited positive human capital capacity in the South African petroleum industry or society. The CDP-PUSH-Effects model (PUSH + PULL + BIG PUSH strategies) is designed specifically to bridge the gap and support the development and retention of technically skilled employees in the South African petroleum industry, as well as to promote the process of positive human capital capacity development in South Africa. Accordingly, the next sub-section describes the strategic approaches that contributed to the formulation of the CDP-PUSH-Effects model.

7.3.2 Understanding the CDP-PUSH-Effects model that involves Push and Pull strategies for human capital capacity development and organisational sustainable development

In this section, Push, Pull and the Big Push strategies are presented as the line of attack, which are discussed towards explaining the pillars that contributed to structuring the CDP-PUSH-Effects model. Moreover, the formulation of the CDP-PUSH-Effects model for human capital capacity development in the workplace consists of “PUSH + PULL + BIG PUSH strategies”. This formula is proposed by the researcher to deal with the issues of technical skills shortages, skills waste and the deficit of positive human capital capacity affecting the South African petroleum industry and society at large. The description and understanding of PUSH, PULL and BIG PUSH strategies are displayed in this section.

What is a Push strategy? How can this strategy promote human capital capacity development, petroleum industry development and socio-economic transformation in South Africa?

Joseph (2019) stated that a Push strategy is a promotional strategy where organisations/institutions attempt to lead their employees to learning activities via various techniques of skills training programmes. Thus, organisations/institutions often use a Push strategy when there is a need for technological competitiveness, socio-economic sustainable development, environmental changes, products or services development, innovation and for positioning the organisation/institution on a level that differs to those of other competitors in the marketplace (Joseph, 2019). This implies that a Push strategy can be especially beneficial for existing and new skills/knowledge

development that is not well-established, or for new equipment/technologies being introduced that needs additional human capital capacities/skills.

What is a Pull strategy? How can this strategy promote human capital capacity development, petroleum industry development and socio-economic transformation in South Africa?

A Pull strategy takes the opposite approach to a Push strategy. According to Joseph (2019), the goal of a Pull strategy is to get capacity development programmes done by providers, which are required to provide necessary skills training programmes (knowledgeable information) to employees within an organisation/institution. Common approaches used for a Pull strategy include mass media promotions, word-of-mouth referrals and advertised areas of need for human capital capacity development in the workplace. According to Robertson and Thompson (2019) and Joseph (2019), the socio-economic impacts from Push and Pull strategies is that an organisational/institutional perspective to use a pull strategy may consist of creating a preventive situation where environmental instabilities and changes can affect the organisation in one way or another, while a Push strategy may be remedial for organisational sustainable development.

In addition, a pull strategy can be beneficial for sustainable competitiveness and socio-economic development. Therefore, organisations/institutions generally will/may use a Pull strategy when they know the type of skills training programmes (capacities, skills, talents) they are looking for, or the problem that they want to solve preventatively or helpfully. However, the requirements for pulling programmes of capacity development to existing problem (technical skills shortages in the South African petroleum industry, for example) will necessitate Push efforts (awareness campaigns) as input ingredients in the process of solving the crises of human capital capacity development within an organisation.

According to Robertson and Thompson (2019), the business concepts *Push and Pull* are from operations management, logistics and supply chain management and are widely used in marketing and hotel distribution businesses. In the context of developing technical skills in the South African petroleum industry or for socio-economic transformation in the country, Push and Pull approaches/strategies are expected to be used concomitantly or concurrently (Push-Pull strategies) as strategies

that can stimulate, improve, increase, or develop the skills/knowledge/talents/ability or capacity of employees in the workplace. In addition, Push-Pull strategies could be indispensable in a situation where the requirements for organisational change and development are critically upraised in line with industrial revolution or business environment change. According to Smit (2016), business environment uncertainties or industrial revolutions are strongly influencing the way in which organisations/businesses are operating. This means that organisational vision, mission, values, culture, objectives, policies, strategies, etc. are subjected to change due to external environment effects. Consequently, Push-Pull strategies can assist organisations to adapt their structures in relation with environmental variability.

According to Joseph (2019), a Push strategy is necessary for organisational/institutional capacity development, given that the Push strategy is a key motivator that stimulates stakeholders' (employees) awareness to engage/commit themselves with learning processes or developing a learning culture in the workplace to gain competitive opportunities and overcome potential threats from environmental variations. Contrarily, a Pull strategy can be useful for readiness for eventual environmental change. A Pull strategy pulls/attracts preventively or proactively necessary skills learning programmes from local or international capacity development providers to keep employees competitive and relevant in line with an unpredicted future and for the organisation to gain competitive advantages over other competitors.

Furthermore, Joseph (2019) denoted that a Push strategy is a quick way/approach to move employees from awareness to actively participating in a learning activity or process in the workplace, while a Pull strategy is about building constant relationships with partners or providers of capacity development programmes in prevision for anticipating environmental instabilities. Thus, in light of the aforementioned, both strategies serve the same purpose: that of moving employees along the journey from awareness to learning process of skills training programmes and keep them skilful, competitive and ready for the best practice of productive operations in the workplace. Nevertheless, Pull strategies tend to be more successful at building employees' capacities in various required disciplines, whereas the organisation or institution needs more Push strategies for skills development in areas that demand additional efforts for productivity and performance improvement.

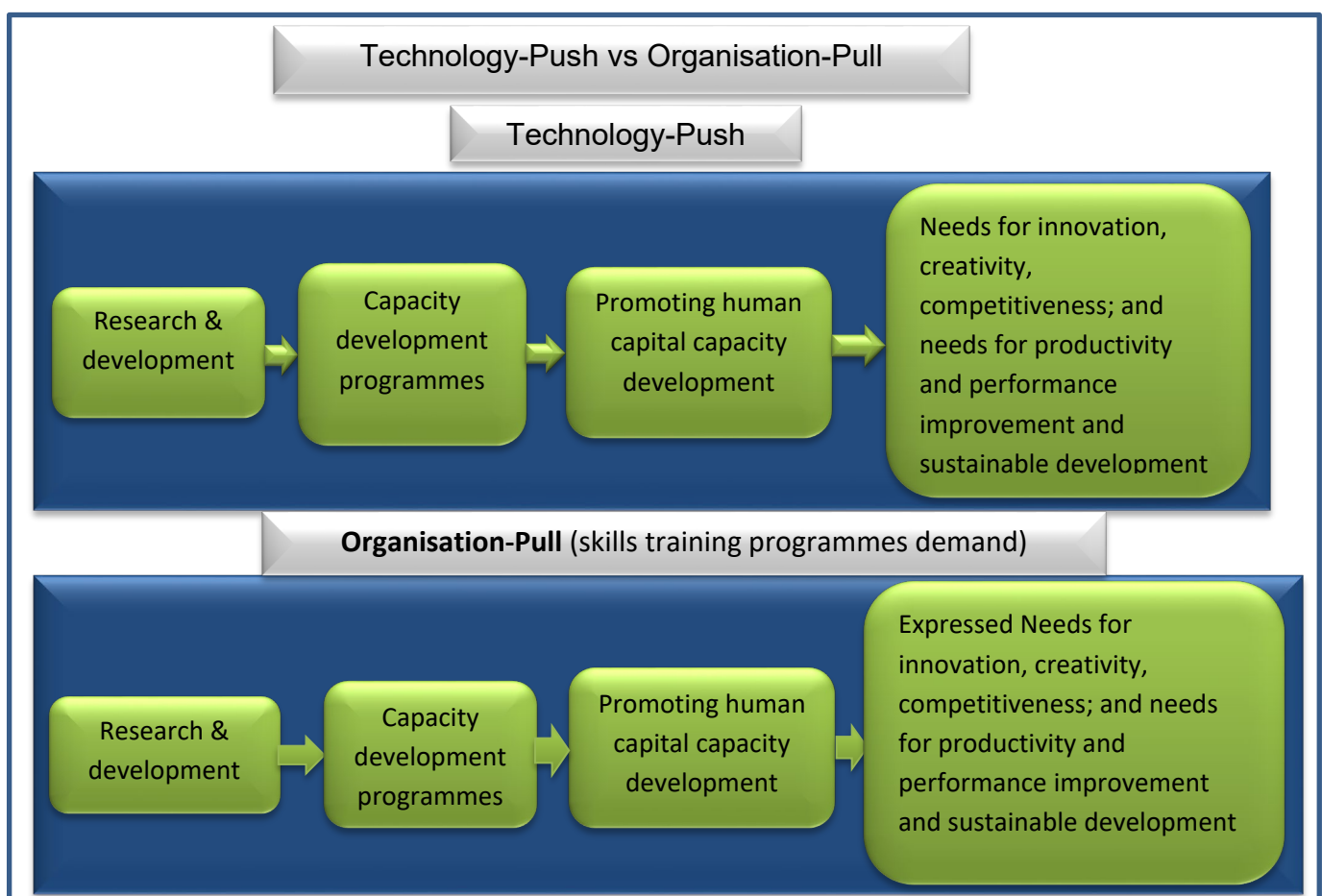
Therefore, while some organisations/institutions may decide to adopt one or the other strategy, it is important to find a complementary balance between the two strategies. Thus, choosing strategies or approaches for capacity development programme usage in the petroleum industry should be done carefully in relation to organisational development goals and objectives, or in relation to socio-economic transformation perspectives in the country. Therefore, based on the challenges affecting the South African petroleum industry currently, Push-Pull strategies can be converged or mixed to produce a more dynamic approach or strategy. Hence, the mixed approach: **Push + Pull = “Big Push strategy”**, may be required for resilient interventions to tackling and solving more critical issues such as technical skills shortages, skills waste and the deficit of positive human capital capacity affecting the petroleum industry and South African society.

The Big Push approach can be helpful or supportive in stimulating the awareness of decisions-makers and stakeholders for urgent and dynamic interventions concerning scarce skills development (see Figure 7.9) in the South African petroleum industry. Therefore, the CDP-PUSH-Effects model formula consists of **PUSH + PULL + BIG PUSH strategies**. The usage of this formula in the South African petroleum industry may be indispensable because of the high expressed demand for chemical engineers, process technologists, mechanical engineers, geologists, and electrical engineers that are in constant demand (CHIETA Regional Skills Forums, February 2020). Consequently, mixing together Push-Pull and Big Push strategies to launch aggressive skills training programmes campaigns should be indispensable for employers to invest continually in employees’ capacity development.

The mixed strategies should also work concurrently and effortlessly to motivate employees for technical skills development in the South African petroleum industry. Aptitudes, skills or knowledge development with new/improved strategies and programmes of capacity development are essential in enabling employees to remain technologically and environmentally relevant and more accountable or sensitive in line with organisational goals and objectives achievement. Thus, in some cases, Push and Pull strategies can be applied individually or separately. **In a Push strategy, the idea is to promote employers’ and stakeholders’ awareness and pushing them to participate actively in the process of capacity development programmes.**

Furthermore, a Push strategy pushes stakeholders to awaken/stimulate employees' awareness of more learning activities or skills training programmes in the workplace, in line with advanced technologies and environmental changes and in line with product or service demands in the marketplace. Moreover, in a Pull strategy, the idea is to request and establish necessary skills training programmes from providers of skills development programmes, following organisational/institutional requirements/needs for specific capacity development in areas of shortage capacities (Robertson and Thompson, 2019). In addition, the Pull strategy pulls programmes of capacity development in relation to the expressed demand for skills development, in line with the need for productivity and performance improvement. Figures 7.3 and 7.4 are illustrative of the significance and usefulness of Push and Pull strategies practice for human capital capacity development and organisational development.

Figure 7.3 Technology-Push vs Organisation-Pull



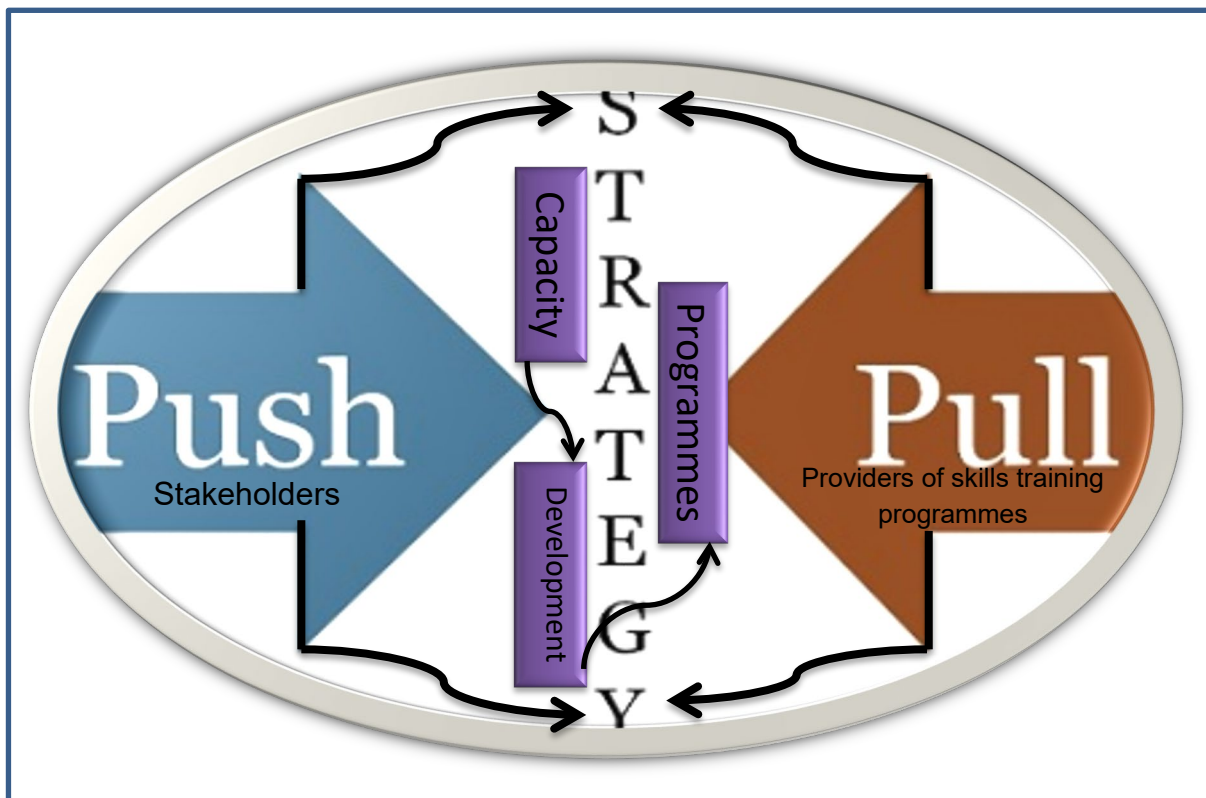
Source: Adapted from Robertson and Thompson (2019)

Figure 7.3 simply illustrates that promoting a Push strategy refers to a situation where an organisation/institution pushes its stakeholders to gain awareness of the existing

state of affairs or challenges affecting goals and objectives achievement, through observation of situations like organisational low performance, low productivity and low technological competitiveness. In addition, a Push effort is required for human capital capacity development to invert or change an existing state of affairs to a sustainably better condition. Additionally, Figure 7.3 indicates that a Pull strategy aims to reach an organisation's/institution's needs, which have shown existing interest in capacity development programmes about developing human capital capacity. Consequently, a Push strategy will require research and development that promotes capacity development programme usage within an organisation for continuous human capital capacity development in prediction and prevision of requirements for technological development and environmental change, as well as requirements for innovation, creativity, competitiveness and needs for organisational productivity and performance improvement or socio-economic sustainable development.

However, a Pull strategy suggests research and development that promotes capacity development programmes/interventions in supporting interested organisations that are prepared to promoting human capital capacity development in relation/link with expressed needs for innovation, creativity, competitiveness and needs for productivity and performance improvement and sustainable socio-economic development. Figure 7.4 makes one understand the relationship between Push and Pull strategies and describe possibilities for the two strategies to be used concurrently in the South African petroleum industry for technical development, minimising skills waste and promoting positive human capital capacity development in the country.

Figure 7.4 Relationship between Push and Pull strategies



Source: Adapted from Robertson and Thompson (2019)

Figure 7.4 illustrates that pushing the right buttons (awareness of improving or developing individuals' specific skills in the workplace) and pulling the right doors (specific skills training programmes for human capital capacity development) can facilitate more access to organisational/institutional productivity and performance improvement (through innovation, creativity, and competitiveness). Push and Pull strategies are both necessary for motivating employers and employees to work confidently, enthusiastically, and effectively.

Thus, the CDP-PUSH-Effects model usage comprises the two promotional skills development strategies which must be applied together as one strategy, whether for technical skills development and retention or for positive human capital capacity development in the workplace. Therefore, Table 7.4 provides more understanding about the meaning, objective and usefulness of Push and Pull strategies for human capital capacity development.

Table 7.4 Meaning, objective and usefulness of Push and Pull strategies

BASIS FOR COMPARISON	PUSH STRATEGY	PULL STRATEGY
Meaning	Push strategy is an approach that involves direction of capacity development efforts to channel stakeholders.	Pull strategy is an approach that involves promotion of capacity development programmes efforts to employees whether in the workplace or in the external centre of capacity development.
What is it?	A strategy in which company's management encourages employees to participate in learning or training of skills development process.	A strategy in which employees' desires for skills development require the decision-making of the organisation before interventions of skills training programmes providers.
Objective	To stimulate stakeholders' awareness from available learning programmes of skills development in the workplace.	To attract providers of capacity development programmes in prevision for employees to participate in the learning process in the workplace.
Uses	Workforce, skills programmes promotion, change etc.	Attracting and promoting programmes of skills development for human capital capacity development and organisational effectiveness, performance, and sustainable development.
Emphasis on	Resource allocation and specific programmes that emphasis on skills development in the workplace. Awareness campaign of information on skills training programmes in the workplace, which must pave the way to capacity development programmes before the start of employees' capacity development in their respective field of choice.	Responsiveness in terms of goals and objectives achievement based on the ability to work efficiently and effectively.
Sustainability	When the skills performance is low, capacity development programmes increase and improve human capital ability to work effectively for organisational sustainable performance and socio-economic development.	When new skills/knowledge is highly required, capacity development programmes is used as response to the demand for needed skills/talents, knowledge/capacities/abilities development within an organisation.
Lead Time	Long term: regular or continuous human capital capacity development must take into consideration environmental change and technological evolution.	Short term: capacity development programmes must consider developmental objectives achievement and sustainable organisational competitiveness, productivity, and performance.

Source: Adapted from Robertson and Thompson (2019)

Figure 7.4 indicates that a Push strategy consist of pushing human resources into the learning process by making them aware of it, while a Pull strategy relies on the opinion to get capacity development programmes done with the intention of building or developing human capital capacity development in the workplace. Furthermore, Table 7.4 denotes that the strategy whereby education (training) channels are used to push employees to learn in the workplace is called a Push strategy. It explains operations of learning activities and information from capacity development providers to employees. In this strategy, the organisation must indicate required programmes in response to critical needs for employees' capacity development and for product or service improvement/development, which must be appropriately linked to the need for skills development and to organisational-stated objectives through various capacity development activities.

This strategy consists of implementing a suitable method or approach to capacity development that will have a direct impact on employees' skills development and increasing the performance and productivity of the organisation. This intervention approach/strategy can be called "reactive capacity intervention/training". In contrast, Table 7.4 indicates that the learning strategy aiming to generate interest for a particular capacity development programme's service (to the targeted employees in the workplace, in a way that they require services from partners/providers of capacity development programmes) is called a Pull strategy. In this strategy, employees' requirements for skills development are intensified by directing learning strategies to them, which results in the 'pulling' of necessary programmes.

A Pull strategy is one such active strategy in which employees actively participate in particular programmes due to the quality and reliability of the programmes and the reputation of providers. Therefore, the advantages of mixing these two strategies in the process of developing technical skills in the South African petroleum industry can be captured in line with information presented in Table 7.5 on the convergence between Push and Pull strategies.

Table 7.5 Convergence between Push and Pull strategies

1. The type of strategy, which involves direction of capacity development efforts to employees in the workplace, is called Push strategy. On the other hand, the strategy involving the promotion of capacity development programmes efforts to employees is called Pull strategy. Both strategies are targeting human capital capacity development in the workplace.
2. In Pull strategy, capacity development programmes are required by the organisation, while in Push strategy, no such requirement is necessitated.
3. Push strategy aims at making stakeholders aware of organisational situation/needs/problem or challenges related to skills development and to a possibility of using capacity development programmes as way out to skills shortages or to human capacity development. Pull strategy encourages organisation to seek for capacity development programmes providers and for suitable skills development programmes to be provided in link with organisational aim and objectives for development.
4. Push strategy involves workforce and channel partners' awareness to support capacity development programmes in the workplace. Pull strategy uses promotion of latest new skills/knowledge necessary for employee's capacity/skills development in relation with technological development and environmental changes.
5. Push strategy focuses on resource allocation whereas pull strategy is concerned with responsiveness.
6. There is a long lead-time in Push strategy. However, it is just opposite in the case of pull strategy
7. Push strategy is best suited when there is requirement for capacity development in the workplace. Pull strategy is appropriate for providing programmes of capacity where needs for skills development is well known about specific skills development, and they opt for a particular programme available and required by the organisation.

Source: Adapted from Robertson and Thompson (2019)

Table 7.5 highlights that an organisation like the South African petroleum industry should focus on converging both Push and Pull strategies for effective human capital capacity development. When a Push strategy is converged or combined with a Pull strategy, the result of the CDP-PUSH-Effects model implementation could become phenomenal as it may generate/improve employees' capacity development and increase organisational performance and productivity. Table 7.3 and Figure 7.3 provide acceptable reasons for mixing and applying Push-Pull strategies as a unique strategy. However, it is possible that companies will waste precious time and money in pulling programmes without assessing the individual training needs of members of staff. Therefore, to avoid wasting precious resources, managers should continually assess the individual training needs of their staff, not offer them general, annual training sessions as a matter of routine.

An objective and realistic assessment of training needs must be linked to critical skills development that should start with regular staff investigation. According to Robertson and Thompson (2019), the essential aim of such an investigation will determine:

- ❖ The knowledge, skills and attitudes that employees *currently have* in relation to their task, function or activities;
- ❖ The knowledge, skills, and attitudes that employees *must have* in relation to expected needs for product/service improvement or development; and
- ❖ The required content of training programmes, which will *close the gap* in technical skills shortages in the South African petroleum industry.

The potential outcome of that investigation will determine whether the Big Push strategy is convenient for the types of skills to be developed and the types of skills training programmes to be introduced and adapted for scarce skills development. Therefore, in cases where Push-Pull strategies are required to be implemented together as one strategy in tackling or developing scarce skills in the petroleum industry, Table 7.5 elucidates the reasons for deciding on converging or mixing Push and Pull strategies as one approach. However, according to Robertson and Thompson (2019), the objectives for converging or combining Push and Pull strategy usage in the petroleum industry may include the following motives:

- i. **Increasing productivity:** the productivity of new as well as existing employees could be increased substantially by developing their standards of capacity, knowledge, talent, skills, and attitudes purposefully and by applying these in the workplace via the course of current and future productive operations.
- ii. **Improving morale:** The best practice of capacity development programmes will not only increase employees' productivity in the South African petroleum industry, but could also boost their confidence, which in turn may lead to a higher morale, higher culture of excellence and good behaviour in team working in the workplace. In contrast, the lack (or inadequate) of capacity development programmes could tend for employees to have a negative attitude towards their job, organisation, and society.

iii. Improving partnerships with dependant organisations and/or customers:

Related organisations could improve and change their ways of doing business (culture). The main aim of organisational capacity development should include building, developing, and promoting an excellent partnership with its related companies. Since improved partnership can increase opportunities for a highly competitive environment in the petroleum industry, employees being at the forefront should therefore be constantly well equipped or trained in all the latest technical programmes that promote organisational sustainable development and customers' satisfaction.

- iv. Improving management of function and time:** Capacity development programmes enable employees (managers) to manage their tasks as well as their available time more efficiently. The more skilled an employee (manager) is at planning, organising, leading, coordinating and controlling activities within his own area of operation, the greater opportunities are that costs will be reduced, and productivity increased in the long run.

Other motives such as stimulating creative and innovative thinking; products and services development; and increasing competitive marketing abilities may also lead an organisation to apply Push-Pull or Big Push strategies. Thus, mixing, converging, or combining both Push and Pull strategies in promoting human capital capacity development can breed petroleum industry success, petroleum industry access to competitive advantages and can consequently breed socio-economic transformation success that can contribute to people's lifestyle improvement. In other cases, the CDP-PUSH-Effects model can be applied using the Big Push strategy. The sub-section that follows discusses the Big Push strategy or intervention in the workplace.

7.3.3 The CDP-PUSH-Effects model associated with the Big Push strategy usage for human capital capacity development in the South African petroleum industry

In today's rapidly changing world, Smit (2016) avers that industries are mostly influenced by drastic changes from business environment instabilities, which are characterised by interrelated, complex, unpredictable, uncertain and unstable situations.

Therefore, organisational competitiveness, productivity and performance are typically reliant on available human resource capacity/ability to innovate and create opportunities for development. This implies that no business can operate effectively or productively without using a capable or skilled workforce. For this reason, businesses are required recurrently to consider the best practice of “models/approaches” of capacity development programmes that promote human capital capacity development in the workplace. Consequently, a model of capacity development programmes like the CDP-PUSH-Effects model could be a strategic gadget that organisations can apply in dealing with eventual opportunities and threats from an unstable business environment (Erasmus 2014: 102 and Smit, 2011: 64).

Yet, the Big Push strategy can be one of the ways in which to capitalise/maximise opportunities and minimise threats and to apply an efficient and effective model of capacity development programmes that keep employees abreast of all changes. Nevertheless, according to the United Way of Calgary and Area Report (2011: 11), there is a limited availability of appropriate models to properly understand and frame capacity development activities. However, an appropriate model of capacity development suggested for typical human capital capacity development in any organisation may relate to the type of skills development in demand by an organisation. In the context of this study, such as stated earlier, the “CDP-PUSH-Effects model” is formulated as a reactive, proactive, and active approach (Big Push strategy) to tackling and closing the gap of technical skills shortages in the South African petroleum industry.

For that reason, Lazenby (2016: 45-46) denoted that the vision, mission, strategies, and goals settled upon by an organisation such as the South African petroleum industry are not established in stone for eternity. This suggests that visions, missions, strategies, and goals are not static/stagnant, but flexible, improvable, and changeable. They can be susceptible to innovation, based on environmental volatility. As a result of various and critical instabilities from the business environment and their possible impacts on the petroleum industry, changes are inevitable or unavoidable. However, the improvement of capacity development models or the development of new one is becoming indispensable. Therefore, change should initially start with a Big Push strategy for human capital capacity development.

The researcher posits that the CDP-PUSH-Effects model associated with the BIG PUSH strategy can be applied to prevent, predict, and remedy issues related to scarce skills development in the South African petroleum industry.

7.3.3.1 The Big Push strategy effects aligned to the CDP-PUSH-Effects model usage in the South African petroleum industry

Earlier, it was described that the CDP-PUSH-Effects model formula implicates the approach that includes Push + Pull + Big Push. Push-Pull strategies were discussed in the previous section. In this section, the Big Push strategy is examined as a single approach associated with the CDP-PUSH-Effects model to bridge the gap of technical skills shortages in the petroleum industry.

What is the Big Push strategy? How can this strategy promote human capital capacity development, organisational development, and socio-economic transformation in South Africa?

Todaro and Smith (2016:166,174) maintained that the Big Push strategy, as a single approach, is an economic development approach which is a concerted, economy-wide, and typically public policy-led effort that accelerates economic growth across a wide-ranging spectrum of new industries and expertise. *The theory of the Big Push approach supports an understanding that market failure, skills shortages, skills waste, or deficits of positive human capital capacity can produce a need for concerted policy-led efforts to get the long process of human capital capacity development and organisational/institutional capacity development underway, or to accelerate it (Todaro and Smith, 2015: 166,174).*

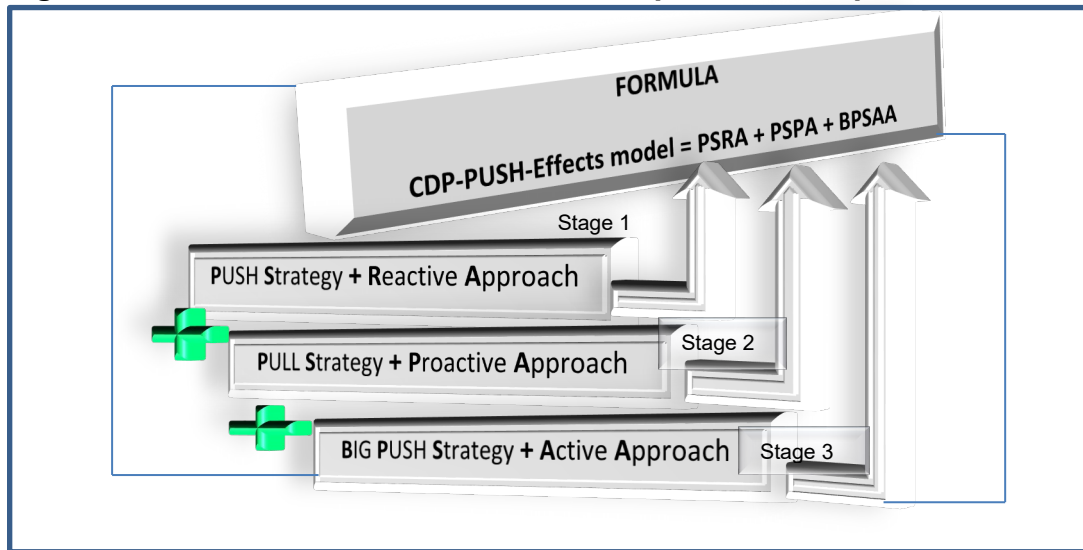
However, in the case of the South African petroleum industry, the theory of the Big Push approach can be applicable in line with scarce skills development. *Hence, the Big Push approach usage in the South African petroleum industry can be essential not only for scarce skills development, but also for improving and developing appropriate policies, programmes, and strategic plans, as well as the improvement of learning structures for skills training programmes best-practice in the workplace. The Big Push strategy for organisational/institutional development advocates that models of capacity development must include training people, promoting a learning culture, and developing learning infrastructure in the workplace (Todaro and Smith, 2015:*

166,174). In the South African petroleum industry, the Big Push approach could be essential in supporting more investment for relevant technical skills training services development. The Big Push approach in the context of industrialising organisations such as the petroleum industry can assist organisations to adapt quickly to environmental change and/or technological advancement. The socio-economic benefits of applying the Big Push approach in the petroleum industry are that employees' skills training programmes can facilitate adaption to the trends of technological change, and that products and services improvement and development are conditioned by the skills/capacities/abilities/attitudes and cultures of the workforce.

Therefore, the dynamism and effectiveness of the CDP-PUSH-Effects model associated with the Big Push approach could create valuable opportunities for organisational competitiveness and improved productivity. It can also promote the best practice and improvement of policies, programmes and strategic plans that support structures of capacity development programmes in the workplace, which can enable people to foster the ability to think, create and solve problems (Rudder, 2010: 44, 50). Nevertheless, Kruger (2019: 229) stated that capacity development is perpetual, and it is never constant. This implies that models and strategies of capacity development are not perpetual: they can be flexible or adaptable to change, and no model of capacity development can remain ever-constant.

Consequently, the CDP-PUSH-Effects model as a reactive, proactive and active approach which includes Push-Pull and Big Push strategies is expected to bring more change in the South African petroleum industry. Therefore, the possible formula that can be applied in tackling technical skills shortages or developing scarce skills in the South African petroleum industry consists of the following: **CDP-PUSH-Effects model = (Push Strategy + Reactive Approach) + (Pull Strategy + Proactive Approach) + (Big Push Strategy + Active Approach)**. Figure 7.5 describes the stages in the formulation of the CDP-PUSH-Effects model that could facilitate the best practice of the CDP-PUSH-Effects model towards closing the gap of scarce skills in the petroleum industry.

Figure 7.5 Formula for scarce skills development in the petroleum industry



Source: Self-generated by the researcher

Accordingly, this formula could play three important roles:

- **Firstly**, the CDP-PUSH-Effects model could be applied as a reactive approach, using a Push strategy to tackle technical skills shortages in the petroleum industry. This refers to urging an awareness campaign on the challenges affecting the petroleum industry and about the need to implement an improved approach that supports employees' skills training programmes in the workplace. This approach can be generally characterised as a reactionary approach, driven by the tactical delivery of technical skills programmes where training will be seen as an event-oriented activity.
- **Secondly**, the CDP-PUSH-Effects model could be applied as a proactive approach, using a Pull strategy in developing scarce/technical skills in the petroleum industry. This refers to the process of instigating/initiating practical decision-making in pulling all the latest and relevant learning programmes from providers of capacity development programmes, taking into account the petroleum industry's strategy on developing employees' competencies. This strategy can be useful when adapting the organisation's competitive advantages to new equipment or technological innovation.

- **Thirdly**, the CDP-PUSH-Effects model could be applied as an active approach using the Big Push strategy for scarce skills development in the petroleum industry. The Big Push approach firstly intends to instigate awareness for stakeholders and decision-makers to improve policies, programmes, and strategic plans, as well as structures and infrastructure that support learning events in the workplace. This refers to ensuring both effective learning and appropriate skills development in the petroleum industry. It will involve a learning approach where trainees will be playing a leading role in learning by exploring issues and situational problems under the guidance of a facilitator.

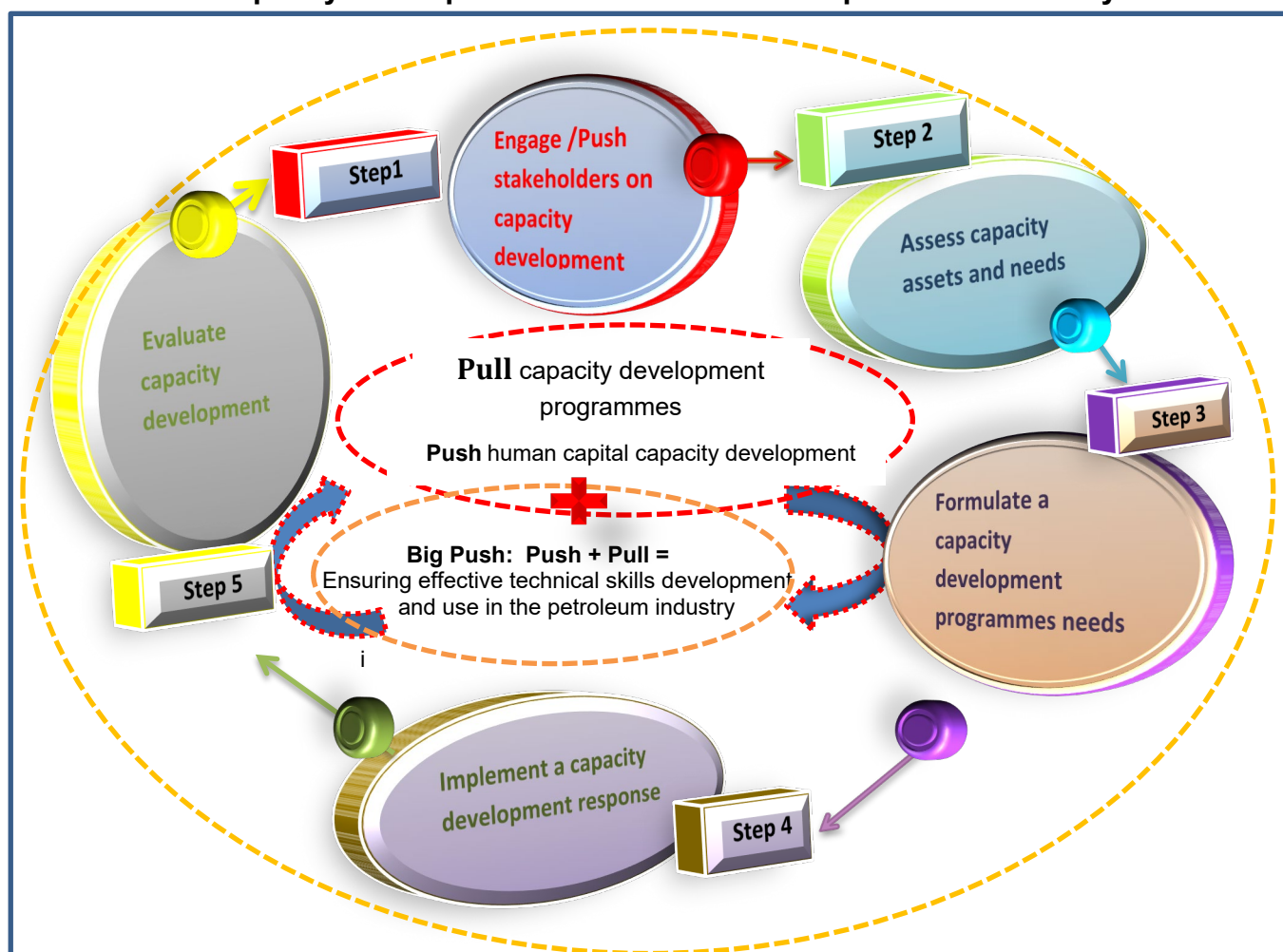
Through this approach, trainees that participate in learning processes will be playing the part of asking questions, searching for answers, and interpreting various observations made during the process. The CDP-PUSH-Effects as an active learning approach could have a vital/positive impact on employees' learning processes since it may contribute to the long-term retention of skilled/qualified employees in the petroleum industry and finding better solutions to the challenging situations of the socio-economic transformation process.

Thus, additional clarification about the CDP-PUSH-Effects model as a reactive, proactive, and active approach to human capital capacity development is described in Section Three, which relates to the potential steps to be followed in the process of applying the CDP-PUSH-Effects model in the South African petroleum industry. However, Figure 7.6 below indicates that to ensure an effective and efficient development and utilisation of technical skills in the South African petroleum industry, the CDP-PUSH-Effects model can be defined as a holistic approach that supports employees' participation in the process of planning, decision-making and dealing with eventual threats and opportunities from the business environment. This implies that the ability to plan for human capital capacity and organisational capability for change and growth cannot be left to coincidence or chance.

Planning for skills development in the workplace will need a Big Push approach where and when it is applicable. Therefore, the demand for chemical engineers, process technologists, mechanical engineers, geologists, and electrical engineers (CHIETA

Report, 2014) will require a Big Push approach. The application of the CDP-PUSH-Effects model associated with the Big Push approach lies in the execution of five major steps, which are illustrated in Figure 7.6.

Figure 7.6 Integrated CDP-PUSH-Effects model aligned to human capital capacity development in the South African petroleum industry



Source: Adapted from the OECD Report, (2015: 6) and the UNDP Report (2009:11).

The steps in Figure 7.6 will be examined and described in Section Three of this chapter. However, the Big Push approach involves the process of planning and synchronising the petroleum industry's long-term skills/competencies/abilities development with the forecasted vision for organisational development and socio-economic transformation processes in the country. In this study, the CDP-PUSH-Effects model aims at ensuring skills development and use in the petroleum industry. In addition, the usage of the Big Push approach relies on fulfilling the steps, which consist of engaging/pushing stakeholders on capacity development; assessing capacity assets and needs; formulating/pulling a capacity development programme's

need; implementing a capacity development response; and evaluating capacity development. The impacts of a holistic usage of the CDP-PUSH-Effects model associated with the Big Push approach may include changes in employees' functional, technical, and behavioural skills development; increasing opportunities for productivity, performance, innovation, creativity, competitiveness, etc.; as well as the opportunity for related industries' expansion and socio-economic transformation. Accordingly, the possible success of the CDP-PUSH-Effects model could firstly rely on organisational awareness and the ability to implement and support programmes, policies and strategic plans that promote human capital capacity development in the workplace.

Secondly, the CDP-PUSH-Effects model's success could rely on promoting skills training programmes, including programmes of developing relevant/required skills, activating skills, and putting skills to effective use. The sub-sections that follow discuss the three dimensions of the CDP-PUSH-Effects model that take into consideration the assumption, practice and results that the CDP-PUSH-Effects model's usage could produce in developing human capital capacity in the petroleum industry.

7.3.3.2 Possible impacts of the CDP-PUSH-Effects model aligned to human capital capacity development, petroleum industry development and socio-economic transformation

Ensuring the development and empowerment of high-performing employees in the workplace could be a dynamic tactic for the South African petroleum industry development and performance. The promising impacts of the CDP-PUSH-Effects model aligned to human capital capacity development, petroleum industry development and socio-economic transformation rely on the mechanism/structures that develop, empower, and retain values-driven, high performing employees with the relevant talents/abilities/skills and experience to ensure and maintain organisational success in an increasingly competitive market/industry. As stated earlier, the CDP-PUSH-Effects model could generate possible impacts if carefully and effectively applied as a reactive, proactive, and active approach in promoting/ supporting existing structures of skills development in the South African petroleum industry. Possibly, as a reactive, proactive, and active approach, the CDP-PUSH-Effects model could

generate positive impacts linked to the improvement of the operations of the petroleum industry and contribute towards achieving the vision, mission, goals, and objectives of the entire petroleum industry. Furthermore, management or leadership styles in the petroleum industry could change due to the increased retention of positive human capital capacity in the workplace. Additionally, the change from behavioural capacity development could generate a positive culture of excellence; increase awareness for the improvement of the reward and recognition system that may amplify competitive skills development; and encourage employees to keep on being more productive, satisfied, and ready to be willingly part of organisational change. Contrarily, the lack of motivation (reward and recognition) systems, as well as the lack of reactive, proactive, and active approaches in promoting employee skills development could engender ineffective results and affect the development and retention of skilled employees in the workplace.

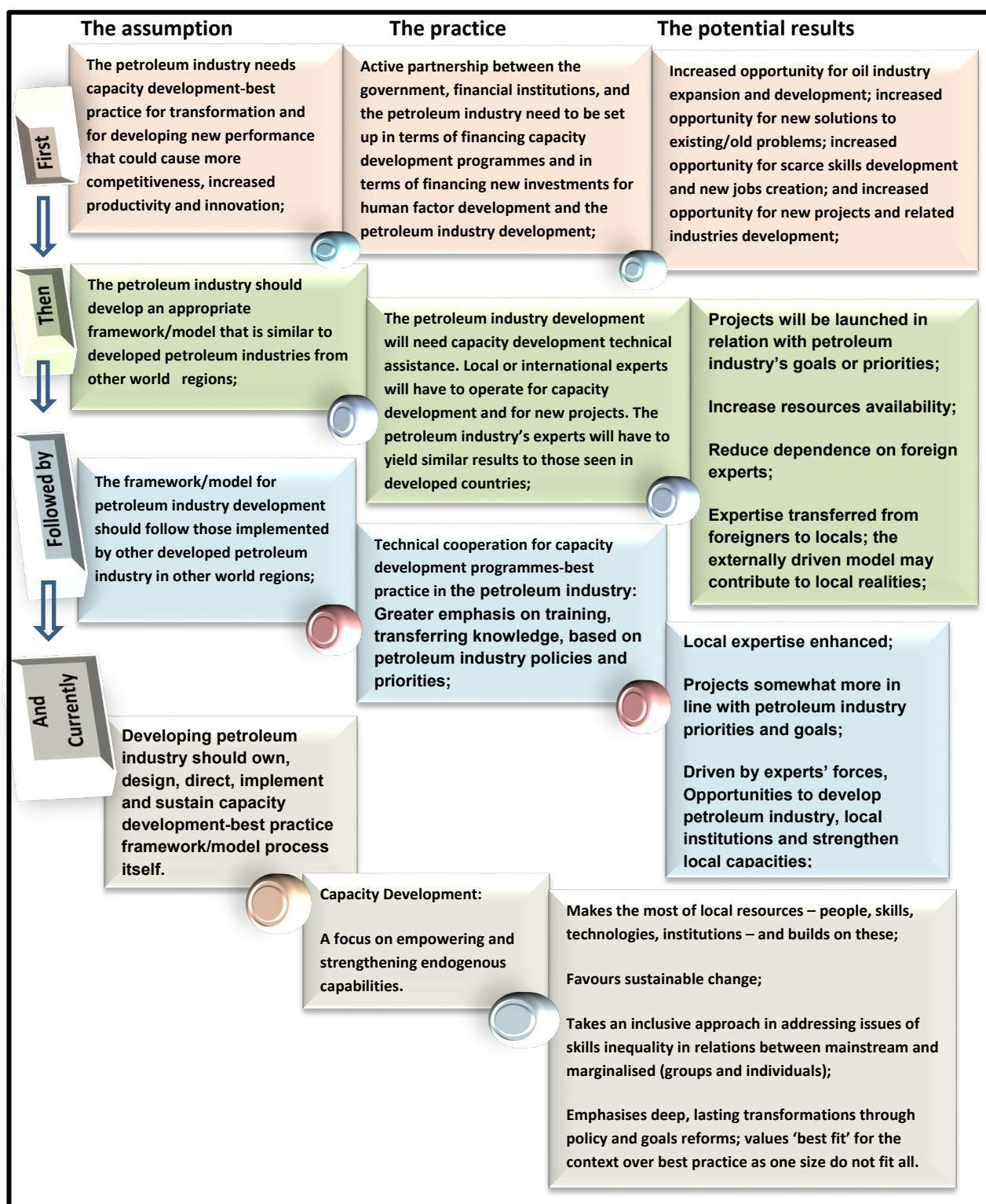
Although an innovative model associated with improved strategies/approaches that may be applied to develop the skills of employees in the workplace; the lack of employees' motivation and recognition for brilliant work done could result in negatively affecting any project of skills development programmes. Consequently, the lack of appropriate reward and motivation systems could create barriers in the process of introducing or implementing an innovative model of capacity development programmes in the workplace. In addition, the behaviour/culture of resistance to change can be intensified and prevent the petroleum industry from developing the required technical skills that could facilitate the achievement of the defined vision, mission, goals, objectives, and strategies of the organisation.

Thus, the contribution of the petroleum industry to national GDP as well as to socio-economic transformation process in the country could be lessened. Therefore, it is imperative to ensure that the usage of the CDP-PUSH-Effects model takes into consideration scarce skills development and the improvement and best practice of the reward system. Therefore, the best practice of the reward system could generate opportunities for the successful implementation of an innovative or improved existing model of capacity development programmes that may influence, stimulate, sustain, maintain, and retain people with scarce skills in the South African petroleum industry. Figures 7.7 and 7.8, and Table 7.7 display the possible impacts that the CDP-PUSH-

development, skills waste alleviation, positive human capital capacity development, an improved culture of excellence, employees' motivation, and satisfaction in link with self-esteem improvement based on skills, capacities, talents, or abilities improvement, etc. The indirect impacts may be linked to organisational productivity, performance, competitiveness improvement; better products and services delivery to communities; and the value of the organisation including its reputation and business name etc., could be raised. The induced impacts could involve an expansion of more oil services development and the development of related organisations, which depend on petroleum products for their existence, survival, and socio-economic operations, etc. Thus, the direct, indirect, and induced effects related to capacity development impacts over petroleum industry development could create more opportunities for new employment creation, poverty reduction and inequality alleviation.

In addition, the CDP-PUSH-Effects model could help to enhance the ability of people in evaluating and addressing the crucial questions related to policy choices and mode of implementation amongst development options, based on an understanding of potentials and limits and of needs perceived by the people of the organisation/country concerned (Buss, 2010: 7-10). Moreover, the assumptions for the effective usage of the CDP-PUSH-Effects model in the petroleum industry can be understood following the description provided in Figure 7.8 that explains the potential results/effects aligned to the CDP-PUSH-Effects model usage in the petroleum industry. It is assumed that in the case of the South African petroleum industry, the CDP-PUSH-Effects model could enable employees to become more responsible, efficient, effective, and competitive in their various operational tasks. Therefore, the potential assumptions from implementing the CDP-PUSH-Effects model in the petroleum industry could result in affording unexpected adversities.

**Figure 7.8 Assumption, practice and potential results aligned to the CDP-
PUSH-Effects model usage in the petroleum industry**



Source: Adapted from the UNDP (2009: 7)

Figure 7.8 describes the assumption, practice, and possible results that the CDP-PUSH-Effects model's usage could generate for the South African petroleum industry's development. Thus, it is assumed that change and transformation in any organisation or society begins with individual (employee) capacity development in a holistic manner, within a system or an organisation (the petroleum industry). Therefore, through the CDP-PUSH-Effects model best-practice, it is assumed that human capital capacity development can boost the petroleum industry value chain and related industries development and contribute to socio-economic transformation.

Accordingly, the CDP-PUSH-effects model usage in the South African petroleum industry predicts possible change and transformation based on various socio-economic activities development and opportunities for new employment. Table 7.6 provides a number of general advantages/benefits that the petroleum industry could gain by means of implementing the CDP-PUSH-Effects model.

Table 7.6 Common advantages/benefits aligned to the CDP-PUSH-Effects model's usage in the petroleum industry

❖ Gaining and retaining the goodwill of employees;
❖ Assisting management to act in the interest of the petroleum industry;
❖ Promoting the development of related companies operating in the petroleum industry as well as promoting the petroleum industry's socio-economic activities;
❖ Keeping employees informed about the activities of the petroleum industry;
❖ Emphasising/communicating the role of the petroleum industry in the economy of the country;
❖ Promoting the system of free enterprise;
❖ Educating employees regarding economic matters of the petroleum industry;
❖ Promoting the name of companies operating in the petroleum industry as a leading concern/organisation;
❖ Developing new opportunities in the petroleum industry and in the country;
❖ Promoting the credibility of the petroleum industry (including of companies involved) and ensuring that it is worthy of the support of the community;
❖ Making the government and financial institutions aware of the petroleum industry's value and
❖ Maintaining good relations with the trade unions;
❖ Faster Decision Making: the CDP-PUSH-Effects model can help improving the effectiveness of an organisation by reducing decision making time and improving quality of decisions making.
❖ Competitive advantage: The CDP-PUSH-Effect model, due to the high competition in the business environment, may promote organisational unique competitive advantages from

human capacities that guide decision-making process. Organisations can get the better off of their competitors and provide better quality service to their customers.

- ❖ Innovation: The CDP-PUSH-Effects model can offer a unique organisational ability derived from developing skills/knowledge resources, which can help organisation deliver innovative products and services to the customers. Innovative products and services can also lead to more informed and quality decision making and better customer satisfaction.

Source: Adapted from Hiat (2006) and Zino (2014: 5)

Table 7.6 discloses general advantages or benefits that the petroleum industry could gain through the best practice of the CDP-PUSH-Effects model in the petroleum industry. For example, the CDP-PUSH-Effects model could assist management to act in the interest of employees' capacity development, as well as keeping employees well skilled and informed about the activities of the petroleum industry. In addition, the specific benefits of the CDP-PUSH-Effects model's usage in the South African petroleum industry in terms of employees' skills development could include aspects such as (Sasol Sustainable Development Report, 2014: 41):

- Enabling the effective delivery of organisational strategy;
- Providing a work environment that attracts and develops the best skills/talents/capacities; promotes a values-driven, high-performance culture; encourages diversity and transformation; and fosters sound employee relations;
- Developing or improving leadership effectiveness in line with the CDP-PUSH-Effects model and a values-driven high-performance culture;
- Ensuring the best practice of skills development structures in the petroleum industry;
- Securing a pipeline of future skills/talents/capacities by continuing to invest significantly in scarce skills development, etc.

In light of the aforementioned, the CDP-PUSH-Effects model supports that employees should be equipped, trained or skilled, and serves as locomotive of the petroleum industry's performance and plays a significant role in the national socio-economic transformation process. Nevertheless, it is essential to acknowledge that the CDP-PUSH-Effects model alone cannot create expected change in the petroleum industry if there is no commitment from stakeholders, the board or top management to revise and improve policies, programmes and strategic plans which should ensure responsibility towards creating agreeable learning and working conditions.

However, the best practice of the CDP-PUSH-Effects model may possibly engender two groups of expectations from both individual employees and the petroleum industry (Kirsten, 2001: 101-102). Firstly, individual employees will be receiving skills training programmes from the petroleum industry. Therefore, it is about what the petroleum industry is expected to offer to the individual employee that will determine the future of the organisation and his own future. Secondly, the individual employee is expected to offer reciprocally what the petroleum industry expects to receive from the individual employee. The performance, productivity, growth, and development of the petroleum industry depends on employees' contribution to team efforts for expected change to happen.

Table 7.7 addresses individual employee and petroleum industry's expectations through the implementation of the CDP-PUSH-Effects model.

Table 7.7 Employees' and Employers' expectations from using the CDP-PUSH-Effects model in the petroleum industry

Individual/Employee's expectations from the petroleum industry	Petroleum industry's expectations from individual/employee who receive skills training programmes
❖ A meaningful job,	❖ Ability to do appointed tasks with knowledge and skills,
❖ Opportunities for personal development,	❖ Ability to learn new aspects of the job,
❖ Interesting work environment,	❖ Ability to invent new methods of job performance,
❖ Ability and responsibility for work well done,	❖ Ability to solve problems, ability to state opinion effectively and convincingly,
❖ Status and prestige for the position,	❖ Ability to work productively,
❖ Sociability amongst co-workers,	❖ Ability to work as a member of group/team,
❖ Compensation and benefits,	❖ Ability to present well-organise and clear reports verbally or in writing,
❖ Secure job,	❖ Ability to supervise and guide others in their work,

❖ Promotional possibilities, and ❖ Enabling employee to work productively and competitively to achieve a rising quality of life for all.	❖ Ability to make responsible decisions without assistance,
	❖ Ability to plan and organise own work and work of subordinates,
	❖ Ability to use time and energy to the benefit of the enterprise,
	❖ Ability to accept and carry out instructions,
	❖ Maintaining a good public image of the enterprise,
	❖ Ability to interact with other employees on a social level,
	❖ Conforming to the norms of the enterprise,
	❖ Self-study outside working hours to develop self-capacity, and
	❖ Accepting the enterprise's values and goals.

Source: Adapted from Kirsten (2001: 101-102)

Table 7.7 reveals possible perspectives in terms of individual's/employee's expectations from the petroleum industry and similarly, the petroleum industry's expectations from individuals/employees who receive skills training programmes. This suggests that the essence of the CDP-PUSH-Effects model's usage in the South African petroleum industry is based on mutual satisfaction.

Earlier, it was stated that capacity development is the locomotive of human capital capacity development and that an essential ingredient of the capacity development approach is "transformation" (The UNDP Report, 2009: 5). Therefore, the CDP-PUSH-Effects model, if well applied, could constitute a vital input/ingredient that can fuel the satisfaction and transformation of both employees and the South African petroleum industry. In addition, the CDP-PUSH-Effects model could also be applied as a holistic approach that supports and promotes the culture of excellence, performance, creativity, competitiveness, and innovativeness in the workplace.

The additional socio-economic benefits from the CDP-PUSH-Effects model's usage in the petroleum industry may take into account aspects such as commitment to the growth of the organisation through team spirit development that tolerates awareness, persuasion, conceptualisation, listening, empathy and therapeutic means of skills management and development (The UNDP Report, 2009: 5). Moreover, the CDP-PUSH-Effects approach could stimulate significant link-effects between the petroleum industry and other oil field services development, including related organisations depending on petroleum products as raw material or vital substances/constituents of

their socio-economic activities. Thus, possibly, the CDP-PUSH-Effects model could be by nature entrepreneurial; change-oriented towards promoting and improving the culture of creativeness; and innovative, including demonstrating initiative, acting, and persisting until the organisational mission, goals and objectives are achieved.

7.3.3.3 Understanding the overall areas of the CDP-PUSH-Effects model's interventions in the South African petroleum industry

Generally, Table 7.8 denotes areas where capacity development interventions are required, whether in the public or in the private sectors. Figure 7.10 particularly indicates the specific areas of the CDP-PUSH-Effects interventions in the South African petroleum industry. However, the CDP-PUSH-Effects model, as a reactive, proactive, and active approach, entails planning the promotion of the skills training strategy or deciding on a strategy that will meet training needs (designing courses/modules, suggesting various methodologies, deciding key learning points trainees must grasp) and the implementation of a training strategy, which involves putting the training programmes into practice.

The OECD (2015: 3) posited that skills are a key driver of innovation, of new technologies/knowledge and higher productivity, which combine to deliver strong and inclusive growth. This implies that the CDP-PUSH-Effects model, if well applied, could contribute to improving knowledge; promoting higher productivity and delivering strong and inclusive growth in the country; increasing the petroleum industry's contribution to the national GDP growth; promoting social change; and increasing government revenue. Table 7.8 illustrates possible areas where the CDP-PUSH-Effects model could contribute to developing human capital capacities in the petroleum industry.

**Table 7.8 General areas of the CDP-PUSH-Effects model interventions
for human capital capacity development in the petroleum industry**

General areas of the CDP-PUSH-Effects interventions:	Potential effects from the CDP-PUSH-Effects interventions
Strategy skills	The CDP-PUSH-Effects could facilitate ability improvement in considering and understanding how a model of skills development fits within an organisation (petroleum industry), how it can deliver value to employees and the ways in which it does this more effectively and efficiently.
Planning skills	The CDP-PUSH-Effects could help to develop the ability to consider what the future might offer in supporting the best practice of skills development model, and how this will influence the business and which resources and actions are necessary to prepare for it.
Marketing skills	The CDP-PUSH-Effects could improve the ability to advertise, promote and evaluate the offering of skills development programmes and their features, to determine how they contribute to employees' need/want for capacity development, and to establish the reasons why employees are required to improve/develop their capacities. The CDP-PUSH-Effects will also help improving the marketing skills, which involve the ability to manage and cope with organisational culture of excellence and promotion of products or services.
Financial skills	The CDP-PUSH-Effects could develop the ability to manage financial resources of the organisation (money), to keep track of expenditure, to monitor cash flow and to assess investments in terms of their potential and risks.
Project management skills	The CDP-PUSH-Effects could enhance the ability to organise skills development projects, to set specific objectives, to draw up schedules and to ensure that the right programmes are in place at the right time. It could also help in making sure that the right providers and right quality of skills development programmes are corresponding to the needs of the organisation, and that necessary resources are prepared for the implementation phase of skills development project.
Human relation skills	The CDP-PUSH-Effects could improve and develop the ability to deal with people, including leadership/conceptual skills, motivational skills, communication/interpersonal skills and technical skills.
Entrepreneurial skills	The CDP-PUSH-Effects could improve and develop the ability to innovate, create, take the risk in one way or another and the ability to correctly interpret the risk situation and then determine actions that will minimise the risk. Also, the CDP-PUSH-Effects will boost entrepreneurial skills, which involve the ability to conceptualise, think and investigate the critical variables of the situation and calculate the probable results before taking any decision, the ability to control and reduce organisational exposure to financial loss and the ability to shortening the time between the conceptualisation and putting into practice of an idea. Entrepreneurial skills include the ability to sustain/tolerate high levels of energy, confidence, future orientation, the desire for feedback, high tolerance for ambiguity, flexibility/adaptability, passion, commitment and determination, opportunity orientation and motivation to excel.
Professional or technical skills (Area of focus for the CDP-PUSH-Effects model intending to promote technical skills development in the petroleum industry)	The CDP-PUSH-Effects model aims to focus on promoting and supporting professional or technical capacity development initiative, which involve improving and developing the skills/ability of chemical plant controllers, the skills of professionals such as chemical engineers, process technologists, mechanical engineers, geologists and electrical engineers, which actually are the necessary skills in demand in the South African petroleum industry.

Source: Adapted from Erasmus (2018)

Table 7.8 demonstrates the general areas of skills development where the CDP-PUSH-Effects model could be useful and effective in developing or improving employees' abilities or skills in the petroleum industry. Thus, the CDP-PUSH-Effects model's usage in the petroleum industry could assist in supporting the development of strategic skills, planning skills, marketing skills, financial skills, project management skills, human relation skills, entrepreneurial skills, and competitiveness skills (Erasmus, 2018).

7.3.4 Summary of Part Two

The CHIETA Report (2014) emphasised that the skills of current employees in the petroleum industry need to be improved to ensure that workers acquire the necessary skills for specific positions so that they can progress in career paths and remain abreast of new technologies and developments in their specific fields. Therefore, in this section, the CDP-PUSH-Effects model was discussed and presented as one of the suitable approaches that can contribute to developing critical skills and knowledge; positive behaviours and attitudes towards using acquired skills and knowledge; and aligning skills and knowledge with organisational objectives and strategies. In addition, the CDP-PUSH-Effects model was described as an approach that can facilitate or ensure continuous learning, adaptability to different business strategies and ensure control mechanisms for human capital capacity's contribution to organisational value creation (Hussain and Roy, 2016: 1032).

This section focused on the formulation and description of the CDP-PUSH-Effects model, proposing the mixing of approaches and strategies which could facilitate the development and retention of technical skilled employees in the South African petroleum industry. Therefore, the CDP-PUSH-Effects model formulation involved the combination of (**Push Strategy + Reactive Approach**) + (**Pull Strategy + Proactive Approach**) + (**Big Push Strategy + Active Approach**). Thus, this formula was symbolised as $CDP-PUSH-Effects = PSRA + PSPA + BPSAA$. However, the assumption from the possible best practice of this formula, which intends to contribute to scarce skills development in the South African petroleum industry, is that the petroleum industry needs capacity development best practice for transformation and developing new performance that could cause more competitiveness, increased

productivity, and innovation. In practice, the CDP-PUSH-Effects model could be useful in activating constructive/productive partnerships between the government, financial institutions, and the petroleum industry in effort to finance capacity development programme activities or new investments in human capital capacity development, which could result in petroleum industry development and socio-economic transformation in the country. In addition, the potential results from the CDP-PUSH-Effects model best-practice could be associated with an increased opportunity for oil industry expansion and development; increased opportunity for new solutions to existing/old problems; increased opportunity for scarce skills development and new job creation; and increased opportunity for new projects and related industries development.

Many could be the benefits related to the best practice of the CDP-PUSH-Effects model in the petroleum industry and for socio-economic transformation in the country. Table 7.6 and Table 7.7 illustrate some of these benefits. Particularly, besides the development of scarce skills, this model/formula could contribute to promoting the development of related companies operating in the petroleum industry, as well as promoting the petroleum industry's socio-economic activities improvement. Therefore, the functioning of the petroleum industry will be more effective, since skilled/specialised staffs are more effective. Effective employees are those that have relevant skills that enable them to achieve the stated goals and objectives of the organisation. Therefore, it is in this perspective that the researcher studied and proposed the CDP-PUSH-Effects model as a reactive, proactive, and active approach in attempting to bridge the gap of technical skills shortages and improving positive human capital capacity development in the South African petroleum industry.

Thus, the CDP-PUSH-Effects model adheres to the principle that consists of taking initiative in making practical decisions, which might contribute to improving and developing people skills, talents, abilities/capacities in the workplace. Nevertheless, without doubting, such initiatives will require solid support and partnership from key players of the South African petroleum industry. Government's Department of Energy, SAPIA, CHIETA, SETAs and other organisations/institutions such as financial institutions should actively invest efforts/resources in promoting the model of capacity development, policies, programmes, and strategic plans that support the process of

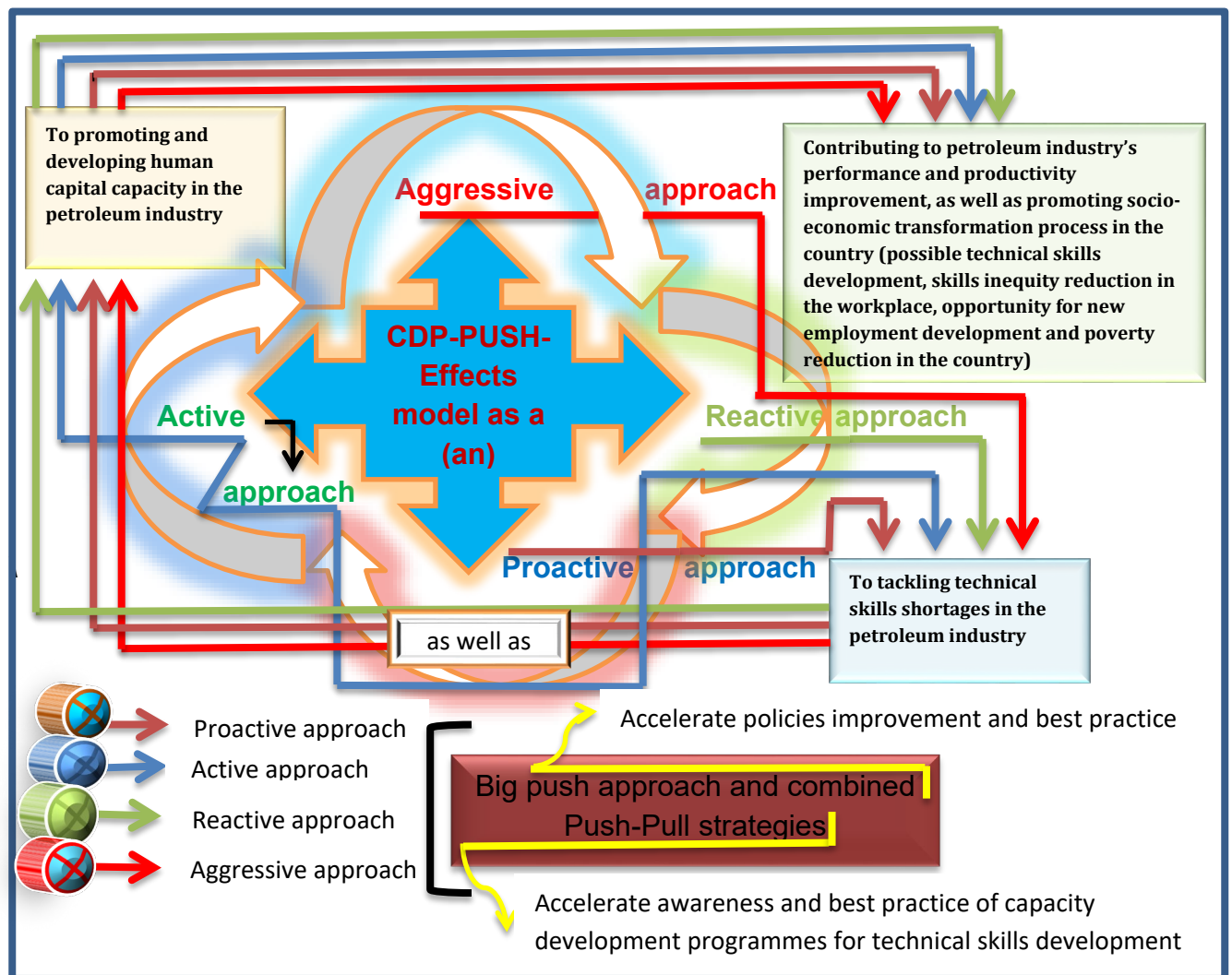
human capital capacity development in the petroleum industry. Greater emphasis must be given to technical capacity development for organisational competitive advantages. Better decision-making, the best practice of extensive communication within the organisation and innovative and creative ideas are what the CDP-PUSH-Effects model can facilitate through sustaining competitive advantages in the petroleum industry.

7.4 PART THREE: UNDERSTANDING THE NECESSARY STEPS ALIGNED TO THE BEST PRACTICE OF THE CDP-PUSH-EFFECTS MODEL IN THE SOUTH AFRICAN PETROLEUM INDUSTRY

7.4.1 Introduction

According to the UNDP Report (2009: 2) and the OECD Report (2015: 6), ensuring an effective and efficient best practice of skills development in the petroleum industry must include the steps that were defined in Figure 7.6. Therefore, in this section, each step is discussed in relation with the formula of the CDP-PUSH-Effects model linked to the Big Push and Push-Pull strategies. However, before discussing these steps, it is significant to disclose, via a schematic representation, the purpose or starring role of each step. Discussions and descriptions will assist to understand the way in which each step will be implemented through the application of the CDP-PUSH-Effects model in the petroleum industry. Figure 7.9 describes the CDP-PUSH-Effects model as an aggressive, reactive, proactive, and active approach that proposes to support technical skills development and retention in the petroleum industry.

Figure 7.9 The CDP-PUSH-Effects model as an aggressive, reactive, proactive and active approach aligned to technical skills development and retention in the petroleum industry



Source: self-generated by the researcher

Figure 7.9 demonstrates the principle that consists of adhering to actions and procedures that meet standards (efficiency) in the process of implementing the CDP-PUSH-Effects model in the petroleum industry. It makes one understand that the petroleum industry must also take into account priorities and major opportunities, which include productivity improvement (effectiveness). Moreover, Figure 7.9 reveals that the CDP-PUSH-Effects model as an aggressive, reactive, proactive, and active approach gives an impression of being supportive in the process of scarce skills development and retention in the South African petroleum industry. Nevertheless, the CDP-PUSH-Effects model's usage will have to ensure that employees are up-loaded

with necessary and relevant knowledge, skills, and new technological information so that they can be empowered to fulfil their tasks/functions efficiently and effectively in supporting the petroleum industry to achieve its goals and objectives. In addition, the central role of the CDP-PUSH-Effects model as an active and aggressive approach to skills development could help in anticipating all forms of environmental challenges and could allow management to perform their duties effectively, coaching, and guiding employees to use the best of their specific skills.

7.4.2 Understanding the CDP-PUSH-Effects model as an active and reactive/aggressive approach to promoting technical skills development in the South African petroleum industry

The OECD Report (2015: 19) indicated that innovative approaches are required to support development, growth, and the socio-economic transformation process. The CDP-PUSH-Effects model, in aligning its resolution to the OECD vision for organisational change, is expected to be implemented as an aggressive/reactive/active strategy to “PULLING OUT” skills shortages by “PUSHING IN” relevant and appropriate learning programmes that could address the petroleum industry’s requirements for technical skills development. Therefore, as an active and aggressive strategy for human capital capacity development, the CDP-PUSH-Effects model involves promoting the best-practice of policies, programmes and strategic plans that can PULL IN local and international pools of knowledge (Experts).

Thus, according to the OECD Report (2015: 19), PULLING and PUSHING stakeholders’ awareness for decision-making towards developing scarce skills in the petroleum industry may be significant for the following reasons:

- To engage more efforts and resources in the process of assessing capacity assets and needs;
- To formulate a capacity development programme’s needs;
- To implement a capacity development response; and

- To evaluate capacity development effects/impacts.

Accordingly, the expected effects of this active and aggressive approach may include the support of learning programmes in the workplace, which probably could contribute to improving the ability of human capital capacity towards petroleum industry development and socio-economic transformation in South Africa (OECD Report, 2015: 3).

7.4.3 The CDP-PUSH-Effects model as an active and reactive/aggressive learning approach to identifying training and skills development needs in the South African petroleum industry

According to the OECD Report (2015: 12), learning in the workplace provides many advantages. It promotes a strong learning environment; contributes to the outputs of the training organisation; and links training provision to a direct expression of employer needs. In provision for human capital capacity development and the petroleum industry's competitiveness and performance, the CDP-PUSH-Effects model as an active and aggressive learning approach suggests that managers at all levels are expected to create and promote a flexible learning environment in the workplace. They must also facilitate discussions about training and skills development needs with each of their staff members at least once a year as part of the performance review and planning process. In addition, the training and development needs of staff newly appointed to their positions should be discussed within a minimum period of four weeks from the time of taking up their position, whether or not they are new to the organisation (OECD Report, 2015: 12).

However, the CDP-PUSH-Effects model as an active and aggressive learning approach supports internal and external skills training and development sessions and/or processes. The internal learning programmes enable employees to work and learn at the same time. However, in some cases, external learning programmes can also be profitable in terms of gaining new expertise and relationships with other people that are operating in the same field or industry in which skills training programmes are being provided. Thus, in the case where skills training programmes must be provided internally, the training and development unit in the petroleum industry will be required to organise skills training programmes for staff on all sub-sectors/sites and can set up

specific sessions to meet the identified needs for a department or section/group of departments or occupational group. The training and development unit in the petroleum industry will have to administer a constant/continuous programme of courses for staff from different sub-sectors or departments of the petroleum industry and offer training sessions for staff as needs will arise. However, as stated earlier, the CDP-PUSH-Effects model as an active and aggressive learning approach does not exclude possibilities for the external training and skills development of employees from different other learning centres. The CDP-PUSH-Effects model suggests that the management of the petroleum industry should be flexible and constantly ready to decide on the interest of employees, as well as of the organisation, by sponsoring and sending staff to attend specific external courses from time to time, whether in the local excellence centre of skills training programmes or in different countries/world regions.

Such opportunities will empower employees to learn, develop and gain competitive skills advantages from recognised local/international academic institutions. Depending on the nature of the course and the periods, the appropriate managers in charge of training and skills development from the learning organisation must define the skills development needs. For example, external training and skills development must be done in accordance with organisational requirements, criteria and/or resources. Therefore, for instance, criteria may include outlined points such as fees (approved travel and accommodation where applicable), which will need to be set from the organisation has centralised training budget. However, in light of the aforementioned, the CDP-PUSH-Effects model advocates that staff members, who are expected to be supported from the organisational budget for external training and skills development, may also generally be expected to pass on the knowledge and skills gained to a wider group of staff members of the petroleum industry.

For example, in this case, the CDP-PUSH-Effects model can be used as an active approach in promoting or sponsoring workshops and seminar activities or various other methods of skills training programmes. Yet, as an active and aggressive approach to human capital capacity development, the CDP-PUSH-Effects model can be strategically implemented to improve and/or make sure that high-quality skills (particularly scarce skills) are developed as a response to petroleum industry development and sustainable socio-economic transformation. Therefore, it is imperative to acknowledge that providing skills training programmes in areas of scarce

skills in the petroleum industry requires active and aggressive actions. Such actions must involve awareness and decision-making from different structures of the petroleum industry, including the South African Department of Energy. Awareness and decisions from stakeholders are essential to identifying a suitable approach, skills development programmes' needs and qualified providers of capacity development, which can alleviate or bridge the gap of scarce skills in the petroleum industry. Significantly, government interventions will be imperative through its different departments responsible for skills development at the workplace (for example CHIETA and SETAs).

Flexible policies, programmes, and strategic plans, as well as productive partnerships (government, petroleum industry and financial institutions) will be a sine qua non condition for the expected success of the CDP-PUSH-Effects model best-practice in the South African petroleum industry. For example, partners will have to agree on the process and criteria that may lead to identifying and selecting the best providers of skills training programmes, whether from local or international locations. Thus, the petroleum industry will be responsible for facilitating the selection of suitable candidates (employees) ready for skills training programmes. In addition, opportunities must be given to teaching employees to become accountable to the organisation and to their team members in the workplace.

7.4.4 The CDP-PUSH-Effects model as an active and reactive/aggressive learning approach aligned to the retention of technical skilled workforce, skills waste alleviation and newly recruited workforce participation in learning processes in the South African petroleum industry

According to Kruger (2019: 324), technical skills shortages, skills waste or the recruitment of a new workforce occurs in most organisations, including the South African petroleum industry. According to the OECD Report (2015: 5), concerted efforts from stakeholders could be imperative and necessary to bridge or close the gaps of skills shortages and minimise skills waste in the petroleum industry. This may be possible by allowing the usage of an active and reactive/aggressive approach that supports not only the development and retention of a skilled workforce in the workplace, but more importantly, that promotes the full usage of available existing

skills within the organisation. Whether for the development and retention or for the full use of existing skills in the petroleum industry, the CDP-PUSH-Effects model could play a significant role in relation to the following:

- ❖ **The development and retention of a technically skilled workforce:** The CDP-PUSH-Effects model intends to support technical skills development and the best practice of skills training programmes in the workplace. The CDP-PUSH-Effects model could greatly contribute to promoting the development and retention of a skilled workforce in the petroleum industry, as well as in creating opportunities for learning structures and infrastructure improvements in the workplace. Concerted efforts from both the petroleum industry and the government are required in making the most of investments in technical skills development and on improving policies that support the retention of a technically skilled workforce, whether in the petroleum industry or in other various socio-economic sectors (OECD Report, 2015: 5).

Furthermore, the CDP-PUSH-Effects model usage as an active and reactive approach should obtain the commitment of players/stakeholders in the petroleum industry to developing systems/mechanisms that support the process of monitoring the technical skills drain or emigration of scarce skills to other world regions. Efforts/resources should be put into action to improve and facilitate immigration legislation or guidelines that support and value the import of approved scarce skills from other foreign countries/regions to bridge the gap of technical skills shortages in the petroleum industry or in other socio-economic sectors where the demand for scarce skills is upraised.

Therefore, it is important that policies, programmes, and strategic plans that support and sponsor technical skills development should contribute to promoting the development and retention of scarce skills in the petroleum industry. Yet, efforts/resources are needed to develop mechanisms that can identify and eliminate the drain of technical skills and to alleviate skills waste in the public or private sectors.

- ❖ **Skills waste:** skills waste occurs in most organisations (Kruger, 2019: 324). This implies that skills waste or the lack of full usage of existing and available scarce skills in the petroleum industry, or in other public and private sectors,

could probably occur because the skills of employees may be misused, abused, or totally ignored (Kruger, 2019: 324). However, skills waste may possibly not often be easily identifiable because it may be classified as a hidden waste.

Therefore, Kruger (2019: 324) indicated that the most common waste of employee skills occurs when an employee possesses a special skill and management ignores it or does not develop it to its fullest potential. Furthermore, a waste of skills may also occur when management under-values the existing scarce skills possessed by employees (local or foreign employees). Therefore, the shortage of technical skills in the petroleum industry could possibly originate from various situations. A waste of scarce skills that have been already identified and no efforts were put in place to recognise it or to use it fully in terms of improving employment conditions could drive/lead to technical skills drain and consequently, to technical skills shortages in the petroleum industry.

In addition, when management withholds skills training programmes or information from employees relating to individual or collective learning opportunities in the workplace, this situation may prevent employees from developing their skills. This situation could also cause technical skills shortages within the organisation. Therefore, in acting in that way, management could prevent employees from making decision in terms of developing limited skills. Consequently, a technical skills drain/shortage could be the result of management withholding skills training programmes or information related to employees' skills development. Thus, it is in this perspective that the CDP-PUSH-Effect model is proposed as an active and reactive/aggressive approach to human capital capacity development in the workplace.

It could contribute to promoting stakeholders' awareness and commitment to create opportunities for learning programmes in the workplace, tackling skills waste in the petroleum industry, as well as promoting or sponsoring the full utilisation of existing scarce skills in the workplace. In addition, the CDP-PUSH-Effects model may contribute to facilitating a solid and accurate partnership between stakeholders for more efforts, commitments, resources, and responsiveness that can stimulate the process of scarce skills development and skills waste eradication. However, the CDP-PUSH-Effects model could be imperatively used in undertaking such initiative.

Once again, partnerships between public and private educational institutions and the petroleum industry will be required in supporting capacity development programmes usage and best practice in the workplace. Moreover, available funds will be needed for research development on capacity development programmes to identify skills waste, and approaches/strategies that could assist in minimising the negative impacts of skills waste or skills shortages in the South African petroleum industry. Therefore, the CDP-PUSH-Effects model could be appropriate to develop a scientific research mechanism that may define procedures to be undertaken in the provision for wastage and shortages/skills gap eradication.

The public sector and petroleum companies will have to play a critical role in ensuring that models of capacity development programmes associated with active and reactive/aggressive approaches, as well as with the Big Push strategy, can be applied with respect to national policies, programmes, and strategic plans to support technical skills development processes in the country. Table 7.9 helps to identify areas that require more efforts for the active utilisation of the CDP-PUSH-Effects model in the South African petroleum industry.

Table 7.9 Areas that require more efforts for the active usage of the CDP-PUSH-Effects model in the South African petroleum industry

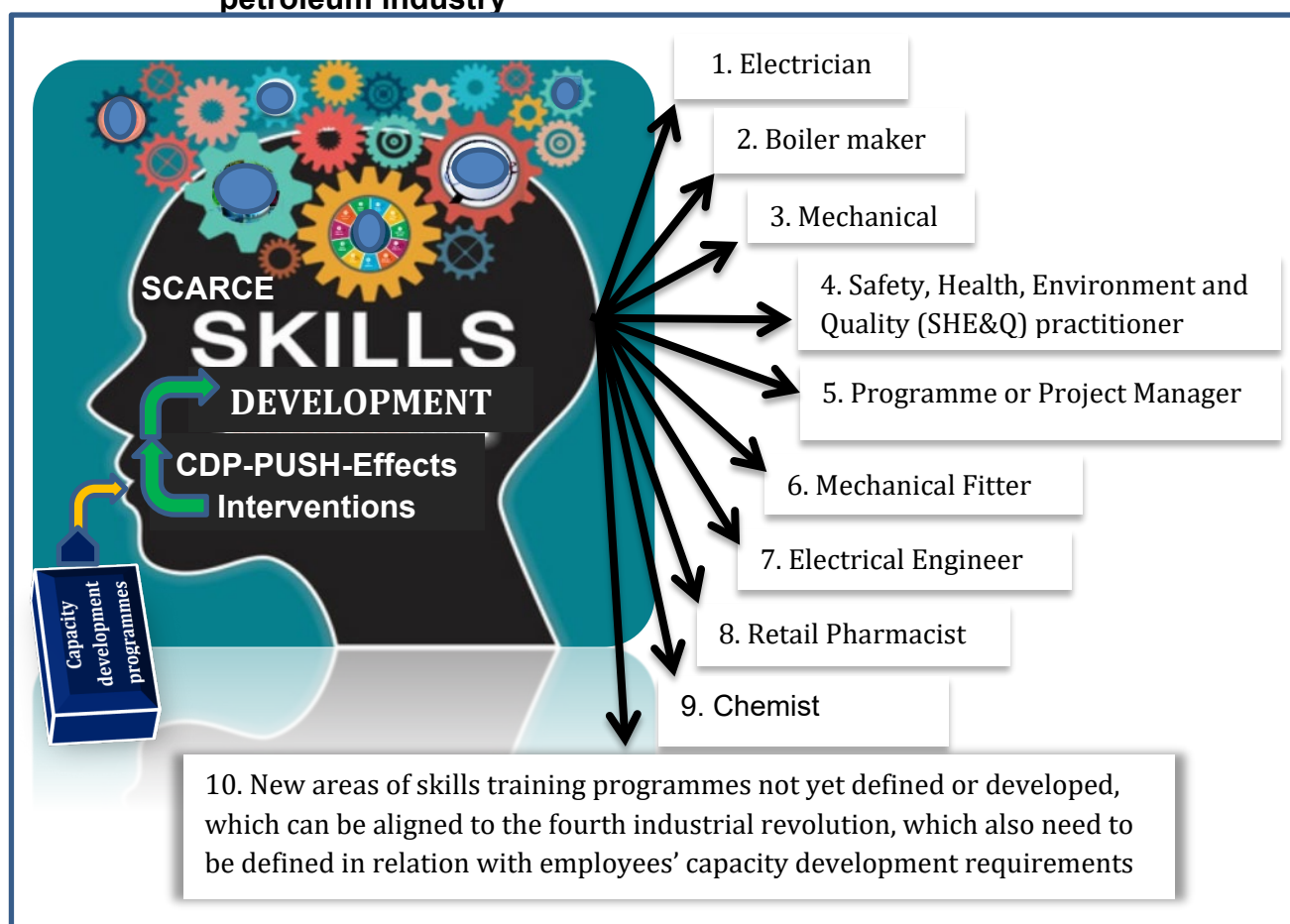
Efforts and supports for active and aggressive CDP-PUSH-Effects model interventions in the South African petroleum industry are required in various areas	
❖	Currently, the CDP-PUSH-Effects model usage required efforts to quickly develop sectoral priority occupations in areas that include Electrician; Boiler maker; Mechanical engineer; Safety, Health, Environment and Quality (SHE&Q) practitioner; Programme or Project Manager; Programme or Project Manager. Mechanical Fitter; Electrical Engineer; Retail Pharmacist and Chemist, which are in strong demand in the petroleum industry. Efforts are needed in constantly developing skills for work and life;
❖	The CDP-PUSH-Effects model requires efforts to encouraging organisations (petroleum industry) to constantly invest in employees' technical skills development;
❖	The CDP-PUSH-Effects model requires efforts in ensuring that technical skills developed are fully used in achieving better performance, productivity, growth, and development;
❖	The CDP-PUSH-Effects model requires efforts in increasing and improving the level of partnership of science-industry, which must be increased through more proactive state leveraging and steering in pursuit of linkages between capacity development providers and the petroleum industry;

❖ The CDP-PUSH-Effects model requires efforts in encouraging the participation of workers in capacity development training programmes;
❖ The CDP-PUSH-Effects model requires efforts in targeting selected programmes that identify and promote participation of workers and financial support where necessary;
❖ The CDP-PUSH-Effects model requires efforts in improving partnership between the petroleum industry and government Department of Education and Department of Energy;
❖ The CDP-PUSH-Effects model requires efforts in promoting and encouraging more participation of employees in higher education institutions' training programmes or seminar and workshop;
❖ The CDP-PUSH-Effects model requires efforts in improving the quality of labour market information and incentives to workers- learners when they make subjects/career choices for higher education and further education to improve capacities (take up) in scarce skills areas, putting in place programmes incentives to encourage providers to promote targeted programmes in selected institutions;
❖ The CDP-PUSH-Effects model requires efforts in promoting constant relationship between the petroleum industry, government Departments of Labour, Education and Energy;
❖ The CDP-PUSH-Effects model requires efforts in improving alignment between programmes to be implemented and synergies achieved, integrated model/framework designed, developed and piloted.

Source: Adapted from the OECD Report (2015: 5) and CHIETA Regional Skills Forums: Research, Planning, Monitoring and Evaluation (2020)

Table 7.9 describes essential areas that require more efforts for active and aggressive CDP-PUSH-Effects model interventions in the petroleum industry. For example, efforts will be required to increase and improve the level of partnerships of science-industry, which must be increased through more proactive state leveraging and steering in pursuit of linkages between capacity development providers and the petroleum industry. Furthermore, efforts will be required to improve the alignment between programmes to be implemented and synergies achieved; integrated models/frameworks designed, developed, and piloted; and encouraging the participation of new and existing workers in skills training programmes. In light of the aforementioned, the CDP-PUSH-Effects model usage in the South African petroleum industry could facilitate the development of specific scarce skills, which are abridged in Figure 7.10.

Figure 7.10 Specific areas where the CDP-PUSH-Effects model intervention is indispensable for scarce skills development in the South African petroleum industry



Source: Adapted from CHIETA's Regional Skills Forums (February 2020)

Figure 7.10 describes the potential specific areas where the CDP-PUSH-Effects model's usage could facilitate the development of scarce skills in the petroleum industry. The CDP-PUSH-Effects model is expected to facilitate the establishment or improvement of in-house advice and training centres for capacity development programmes in the petroleum industry. Thus, the CDP-PUSH-Effects model could generate successful in-house training programmes for scarce skills development and promote the emerging of new skills not defined before.

In addition, the CDP-PUSH-Effects model's usage in the petroleum industry could contribute to socio-economic transformation via extensive interventions, taking into consideration the map of capacity types that can be developed. Table 7.10 provides some additional capacity types to be developed in relation with institutional capacity development, human resources capacity development, technical capacity

development, financial capacity development, environmental capacity development and socio-cultural capacity development in the country.

Table 7.10 Capacity types required for petroleum industry and socio-economic transformation in South Africa

Capacity types Service	Requirements for capacity development	Capacity factor
Institutional capacity development	Body of legislation Associated regulations Admin agencies Admin processes Governance	Regional → National → State/provincial → Local
	Professional labour	Collection supervisor → Treatment supervisor → Engineer Chemist Admin manger Collection treatment manager
Human Resources capacity development	Skilled labour	Mechanics Clerk → Lab technician Mechanics Clerk Electrician → Lab technician Maintenance technician Operator Admin assistant → Lab technician Maintenance technician Operator Admin assistant IT technician
	Unskilled labour	Maintenance workers → Maintenance workers Plant workers → Maintenance assistant Operator assistant
	Illiterate labour	Caretaker → Maintenance helper
Technical capacity development	Operations	Individual Disposal → Collection Pumping Prelim Treatment → Collection Pumping Complete treatment Bacteriological analysis → Monitoring pumping station Monitoring treatment Bacteriological analysis Chemical/biological
	Maintenance	Sceptic tank pump → Clean collector systems Maintain pump → Collector systems Station pumps Treatment equipment → Collector systems Station pumps Treatment equipment IT systems
	Adaptation	Rarely → Occasionally → Usually → Frequently
	Supply chain	Regional supplier → National supplier → National manufacturer Regional distributor → National manufacturer Local distributor

Financial capacity development	Private sector	International → Regional → National → Local
	Bonds rating	Regional → National → State/provincial → Local
	User fees	Uniform flate rate → Single block rate → Increasing block rate → Increasing block rate
	Budget	Basic accounting → Annual → Tracked annually → Tracked quarterly
	Asset values	Real estate → [Real estate Equipment] → [Real estate Equipment Cash] → [Real estate Equipment Cash Stocks]
Environmental capacity development	Quality and sensitivity	Develop capacity to serve communities from a centralised system
Social/ Cultural capacity development	Community Stability Equity Castes Participation of women	The community can develop capacity to manage a centralised system, along with individual service to more remote units

Source: Adapted from Amadei (2020: 6-7)

Table 7.10 simply indicates a wide but not exhaustive map of capacity development interventions in the country, where the CDP-PUSH-Effects model may be required for human capital capacity development, whether in public or private organisations. Therefore, the development of any types of capacities required by communities will require a Push-Pull or Big Push strategies to build or develop a different environment that contributes to socio-economic transformation in the country. In the case of the South African petroleum industry, Figure 7.10, as well as Table 7.10 may require the Big Push strategy for human capital capacity development and socio-economic transformation.

7.4.5 The CDP-PUSH-Effects model as an active and aggressive approach for employers' participation in motivating employees' capacity development

According to the OECD Report (2015: 4), actionable principles in motivating employers' participation in the process of facilitating the usage of the CDP-PUSH-Effects model (for capacity development programmes) in the petroleum industry may include aspects such as:

- Sustaining or re-affirming their commitment over the importance of a well-functioning and well-resourced skills system for promoting strong and inclusive growth of the petroleum industry;

- Emphasise the significance of policy improvement and coherence for technical skills development in the petroleum industry with full employers' commitment; and
- Categorise or identify necessary actions or approaches that the petroleum industry could take to increase/improve the contribution of skills to stronger and more inclusive growth and contribution to socio-economic transformation in the country.

Furthermore, the OECD Report (2015: 12) emphasised that ensuring skills development (learning) in the workplace guarantees that the skills developed are relevant to employers' needs. Therefore, an additional strategy in promoting human capital capacity development in the petroleum industry is to use any existing model of capacity development (the CDP-PUSH-Effects model) as an active and aggressive approach intended for employers' participation in encouraging employees' capacity development interventions in the workplace. Hence, employers must also ensure that employees are able to afford further education and training opportunities in the workplace. In the petroleum industry, the CDP-PUSH-Effects model could facilitate employers' involvement and awareness in developing employees' capacity in areas of technical skills such as welders, boilermakers, mechanical fitters, and electrical mechanics that are in high demand, chemical plant controllers, etc.

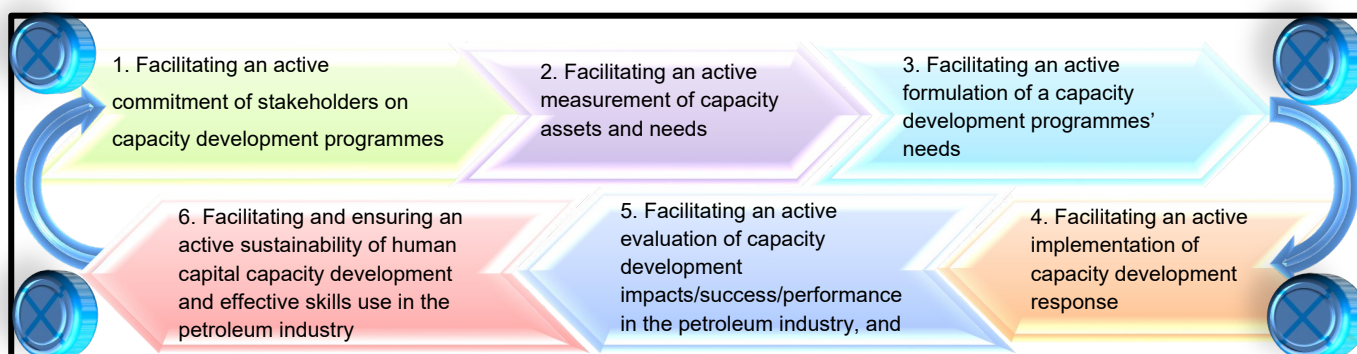
Furthermore, the skills of professionals such as chemical engineers, process technologists, mechanical engineers, geologists, and electrical engineers are also expected to be developed through the adoption of a suitable model of capacity development programmes (CHIETA Report, 2014). This means that more efforts/resources and support from employers are required to put in place actions or strategies that can boost employees' skills and ensure their full use for the petroleum industry's development and socio-economic transformation in the country. Therefore, the CDP-PUSH-Effects model as an active and aggressive approach could help to put in place mechanisms that can facilitate an awareness campaign to motivate employers to support employees' ambitions for further skills training opportunities in the workplace.

Additionally, the CDP-PUSH-Effects usage in the petroleum industry can assist in establishing a platform that could coordinate the integration, partnership, collaboration and teamwork development between employers and employees for skills development, as well as the promotion of good behaviour, change of culture, competitiveness, innovativeness, and creativeness in the workplace. The effects of such partnerships/collaborations could result in organisational vision, mission and goal and objectives achievement. Moreover, the CDP-PUSH-Effects model as a reactive, proactive, and active approach could be indispensable in reaching the benchmark of performance, productivity, and sustainable development; as well as in aggressively confronting or reversing technical skills shortages in the petroleum industry. Thus, the indispensable steps that may guide or facilitate the best practice of the CDP-PUSH-Effects model in the petroleum industry are discussed in the next section.

7.4.6 The necessary steps aligned to the best practice of the CDP-PUSH-Effects model as an active and aggressive approach to promoting human capital capacity development in the petroleum industry

The preceding sections described the CDP-PUSH-Effects model as the potential model that can assist in solving or bridging the gaps of technical skills shortages, skills waste, and the deficit of positive human capital capacity development in the South African petroleum industry and society. In this section, Figure 7.11 describes the steps comprising the best practice of the CDP-PUSH-Effects model as an active and aggressive approach to promoting human capital capacity development in the petroleum industry. Therefore, six essential steps are discussed as key pillars in the process of implementing capacity development programmes in the South African petroleum industry (the CDP-PUSH-Effect model).

Figure 7.11 Steps comprising the best practice of the CDP-PUSH-Effects model as an active and aggressive approach to promoting human capital capacity development in the petroleum industry



Source: Self-generated by the researcher based on Figure 7.6

Figure 7.11 illustrates the necessary steps aligned to the best practice of the CDP-PUSH-Effects model in the South African petroleum industry. Descriptions and explanations of each step are provided in each of the following sections.

7.4.6.1 Step 1: Facilitating an active engagement/commitment/involvement of stakeholders in capacity development programmes for human capital capacity development in the petroleum industry

Earlier, it was emphasised that a Push strategy refers to an approach that implicates awareness and efforts to channel stakeholders' commitment and involvement in the process of employees' capacity development in the workplace. It was also postulated that a Push strategy is a quick way to move stakeholders and employees from a stage of awareness campaign to a stage where they participate actively in skills development programmes. In addition, it was denoted that a Push strategy is an idea that pushes stakeholders to commit swiftly with learning or skills training programmes in the workplace.

Therefore, the UNDP Report (2011: 22) indicated that capacity development starts with the commitment of stakeholders or individuals who are ready to conceptualise, think, communicate/talk and listen to each other about expected or unexpected events and about the probable environmental changes or instabilities which are always influencing organisations. However, the OECD Report (2015: 13) clarifies that

successful skills development programmes can bring together stakeholders (government, financial institutions, employers and employees and other work organisations). Therefore, pushing (awareness campaigns) stakeholders in the process of developing or improving human capital capacity in the petroleum industry or in any other socio-economic sector is the first significant step. The aim of this first step is to get the assurance of every stakeholder in supporting efforts that promote investments in human capital capacity development in the South African petroleum industry. The probable success of the CDP-PUSH-Effects model, in line with the best practice of this first step, depends on the holistic/inclusive consultation, participation and decision-making of stakeholders before launching any preliminary operation of skills training programmes in the workplace.

The participation of stakeholders in this initial step is important in terms of designing the relevant content of capacity development programmes necessary for specific scarce skills development. Nevertheless, consultation and decision-making between stakeholders in the petroleum industry could assist in establishing earlier the level of accountability amongst stakeholders- knowing for example who will do what; who will ensure that things are getting done well; and what the consequences will be if things are not done as expected. In this step, it is remarkable to understand that it is what people do or decide to do accurately at the initial stage that turns failure into success. In other words, a well-done job at the initial stage can guarantee a successful development of technical skills, the eradication of skills waste and the development of positive human capital capacity in the workplace.

Therefore, the CDP-PUSH-Effects model as an active approach could facilitate the implication and consultation of/between stakeholders to stimulate a certain level of commitment, readiness, accountability and/or responsibility in making profitable/productive decisions that may promote scarce skills development in the petroleum industry. Accordingly, it is indispensable to develop a model of capacity development that can inclusively address matters affecting the petroleum industry (technical skills shortages, skills waste, and positive human capital capacity deficiency). Thus, an active engagement/commitment of stakeholders in capacity development programmes for human capital capacity development in the petroleum

industry can be socio-economically profitable for more entrepreneurial activities development in the country.

7.4.6.2 Step 2: Facilitating an active measurement of capacity development programme assets and needs in the petroleum industry

Assessing capacity development assets and needs in the petroleum industry can establish the baseline from which progress should be measured, through identifying existing capacity assets as well as the anticipated desired level of capacity to be achieved in line with the petroleum industry developmental objectives (the UNDP Report, 2011: 23). According to the CHIETA Regional Skills Forum (February 2020), currently, capacity development requirements in the South African petroleum industry bring up a number of challenges that necessitate urgent and appropriate interventions. The CHIETA Regional Skills Forum (February 2020) indicated that capacity development assets and needs for interventions are quickly and imperatively necessary in areas that include:

- The deficiency/lack of relevant qualifications (desired level of study not attained or inappropriate field of study or inappropriate subject specialisation);
- The deficiency/lack of relevant experience;
- Poor remuneration;
- Unsuitable job location;
- Unsuitable working hours;
- Equity considerations;
- Low recruitment processes; and
- New or emerging job not defined before.

However, the CDP-PUSH-Effects model as a reactive, proactive, and active approach involving Push-Pull and Big push strategies could assist in creating an environment where appropriate qualifications and relevant skills which are highly in demand can be quickly developed. In addition, through Push-Pull and Big Push strategies, the petroleum industry can allow/organise a national/regional awareness campaign for quick interventions to develop scarce skills where the demand for new or emerging jobs not defined previously is increasing. For example, the fourth industrial revolution and/or technological innovation are pushing people to learn and adapt themselves with the pace of a changing environment.

Therefore, the objective of the CDP-PUSH-Effects model in measuring capacity development assets and needs is to address and consider important issues like poor remuneration, unsuitable job location, unsuitable working hours, equity considerations and low recruitment processes, which are affecting the petroleum industry. However, these challenges are essential when planning for capacity development interventions in the petroleum industry. Although technical skills development could be a priority, issues like the lack of relevant experience, poor remuneration, unsuitable job locations, unsuitable working hours, equity considerations and low recruitment processes must be addressed, when planning for capacity development interventions during the initial stage.

The Big Push approach could be suitable to produce a need for concerted policy-led efforts to get short and long process of organisational/institutional capacity development underway or to accelerate it. In other words, in attempting to bring expected solutions to the existing challenges (technical skills shortages, skills waste and the deficit of positive human capital capacity) affecting the South African petroleum industry, the best practice of the Big Push approach could be gainful. Unfortunately, no model of capacity development will be successful if the requirements from stages 1 and 2 are not addressed promptly. However, Table 7.11 describes the objective or contribution of the CDP-PUSH-Effects model in measuring capacity development assets and needs in the petroleum industry (the UNDP Report, 2011: 24).

Table 7.11 Objectives for measuring capacity development assets and needs in the petroleum industry

The CDP-PUSH-Effects model contribution (reason) in assessing capacity needs in the petroleum industry	
❖	To develop a comprehensive view of issues that could be addressed in the petroleum industry,
❖	To bring more rigour and an improved systematic method that determine the future capacity needs and assessing existing capacity assets in the petroleum industry,
❖	To create a common language of discussion among potentially disparate stakeholders/parties involved in assessing capacity assets in the petroleum industry,
❖	To provide a structure for discussion amongst stakeholders about the scale and scope of the capacity assessment exercise and about expectations of the capacity development effort more generally in the petroleum industry,
❖	To provide a method for generating quantitative as well as qualitative data to support the development of a capacity development action plan in the petroleum industry.
❖	To make sense of complex development situations, when it is not always obvious where best to intervene to promote capacity development in the petroleum industry,
❖	To improve consistency, coherence, and impact, and increasing the ability to share experiences in the petroleum industry.

Source: Adapted from the UNDP Report (2011: 24)

Table 7.11 describes the reasons for assessing capacity assets and needs in the petroleum industry. For example, if well implemented, the CDP-PUSH-Effect model could assist the petroleum industry in measuring capacity assets and needs for developing a comprehensive view of issues that may possibly be addressed in the petroleum industry to improving consistency, coherence, and impact, as well as increasing the ability to share experiences in the petroleum industry. Therefore, capacity assessment processes in the petroleum industry may comprise three steps, which include mobilisation and design; conducting the process; and summarising and assessing the results (UNDP, 2011: 25). Table 7.12 discusses the three steps involving a capacity assessment process.

Table 7.12 Steps in a capacity assessment process

1. Mobilisation and design	2. Conducting the process	3. Summarising and assessing the results
The CDP-PUSH-Effects model suggests that a capacity assessment should start from the assumption that in the petroleum industry there are existing capacities that can and should be improved and developed. In the case of the South African petroleum industry, the CDP-PUSH-Effects model suggests that capacity assessment should provide opportunity to identify the skills of employees. The range of skills available should allow the petroleum industry to design a strategy, with a mix of short-term and longer-term projects. Capacity assessment will help increasing the culture of performance, competitiveness, innovation, creativity and of improving productivity.	The CDP-PUSH-Effects model could be used as a tool to capacity assessment by comparing desired capacity against existing capacity. The unit of capacity development in the petroleum industry may be tempted to set the level of desired capacity at the highest/lowest level attainable. Therefore, it will be important to define a realistic goal with a realistic timeframe for developing capacities. Measuring existing capacities is significant in managing projects from start to finish. The process of capacity assessment involves planning, designing, implementing, monitoring, and evaluating to show that they can absorb the funds effectively. The assessment must also point out capacity gaps that the funds can be used to address.	The CDP-PUSH-Effects model could provide insights through comparing desired and existing capacities for the formation of capacity development responses. In the process of interpreting the results of the assessment, it will be important that the assessment team must be able to recognise and distinguish patterns in capacity gaps, to identify whether a gap is consistently large across a core issue or across a specific capacity. It will be imperative to gather a variety of perspectives and take into account different points of view.

Source: Adapted from the UNDP Report (2011: 26)

Table 7.12 describes the three steps that are necessary in the process of capacity assessment. Therefore, the CDP-PUSH-Effects model suggests that a capacity assessment should start from the assumption that in the petroleum industry, there are existing capacities that need to be improved and developed. In addition, a capacity assessment process should compare desired capacities against existing capacity and provide insights through comparing desired and existing capacities for the establishment of capacity development responses (UNDP Report, 2011: 26).

7.4.6.3 Step 3: Facilitating an active formulation of the capacity development programme response in the petroleum industry

According to the UNDP (2011: 27), an expected encouraging capacity development response must be developed by considering existing capacity assets to address the gaps identified in a capacity assessment. Therefore, in the process of formulating a capacity development response, factors like strengths and capacity assets are key elements that most stakeholders prefer to play through using what they can do right to do other things better. However, in this stage, the usefulness of the CDP-PUSH-Effects model in formulating capacity development responses aligns with the effectiveness of the response expected, which can increase if combined actions across core issues and levels of capacity development are based on the requirements for the petroleum industry development process.

For example, an assessment of capacity development in the petroleum industry may need to be complemented by a revision of the government's guidelines (policies/strategies) in terms of human capital capacity development in the workplace. In the same way, members of the board and employees may need to be well trained or informed in applying these guidelines and an incentive system needs to be put in place to encourage them to use innovative systems of implementing the guidelines. On occasion, it will be imperative to define rapid gain/short-term activities in the process of skills training programmes to help supporting petroleum industry performance while the human capital capacity development process remains placed for longer-term capacity development initiatives.

According to the UNDP (2009: 27), the design of a capacity development response should therefore contain a combination of both rapid-effect initiatives (short-term: less than one year) and short-to medium-term (one year or longer) initiatives. Therefore, appropriate indicators will have to be settled in monitoring progress in the process of capacity development programme implementation. Furthermore, the process itself of defining appropriate progress indicators will be useful as a way of generating policy discussion; enhancing monitoring systems and evaluation; and as a learning activity. Possibly, a capacity development response must be integrated into existing organisational budget structures to support and ensure continued funding beyond the

involvement of capacity development providers or other external partners. This implies that the cost of capacity development responses will have to be clearly calculated and indicated since it encourages an accurate estimate of the funding required to develop human capital capacity in the petroleum industry. However, assuming that the budget will be insufficient or not enough to cover all proposed actions aligned to capacity development programmes or to the process of human capital capacity development (proves too small), it will be advisable to prioritise or target activities or find alternatives that concentrate on solving the important issues, based on the findings of the capacity assessment.

Nevertheless, in this stage, the application of the CDP-PUSH-Effects model suggests that the process of setting priorities must be essentially based on tackling technical skills shortages and simultaneously developing positive human capital capacity, without neglecting the elimination of skills waste in the petroleum industry. In addition, the process of setting priorities should be managed with care and transparency by involving all relevant stakeholders to ensure their support, commitment and effectiveness during the introduction and implementation phases.

7.4.6.4 Step 4: Facilitating an active implementation of capacity development responses in the petroleum industry

The CDP-PUSH-Effect could help in facilitating an active best-practice of capacity development responses in the petroleum industry. The implementation phase may involve combined Push-Pull strategies or a Big Push approach. It is in this phase that more support, resources, and focus will have to include thinking, planning, assessing, analysing, designing, and testing the CDP-PUSH-Effects model in the real world. According to the UNDP Report (2009: 29), for the most suitable and sustainable long-term results, the implementation of capacity development responses in the petroleum industry must be managed through systems and processes that support strengthening essential capacities such as technical skills development (stated in Figure 7.10) and other important scarce skills development, such as these indicated earlier in Table 7.9. Logically, partners/stakeholders in capacity development programmes will have to show a strong sense of support when it consists of managing appropriately models, approaches, systems, and procedures (policies, programmes, and strategic plans),

which are presented/suggested to them for efficient responsive/approachable implementation of a skills training programmes project. However, any application of capacity development programmes should keep high the expectations of stakeholders, while the project of developing technical skills (the CDP-PUSH-Effects model project) can be made available to them through a seminar, workshop, or conference, which is required to facilitate the transmission of information related to the best practice of the CDP-PUSH-Effects model. For that reason, it is very significant that models of capacity development should be flexible, manageable, helpful, and supportive to allow changes from new ideas during the session of seminars, workshops, or conferences.

The potential socio-economic effects of the CDP-PUSH-Effects model could be seen in the short and long-term via the performance, expansion, and development of the petroleum industry, as well as through the contribution of the petroleum industry to economic growth in the country. Thus, Table 7.13 describes the requirements for local or international expertise in supporting human capital capacity development in the petroleum industry (the UNDP Report, 2009: 30).

Table 7.13 Requirements for local or international expertise in enhancing human capital capacity development

❖ Local or external expertise could offer direct support for services and management based on an assessment of existing capacity and gaps. The assessment could be quick and partial, but should provide an objective starting point for bringing in external expertise.
❖ Local or external expertise could provide support in developing local ability to manage capacity development programmes with help of external providers.
❖ Local or external expertise will help making sure that programmes of capacity development strategies are align to petroleum industry's performance measures, monitoring systems and incentives.
❖ Local or external expertise will include coaching and mentoring as part of capacity development programmes process in the petroleum industry.
❖ Local or external expertise will ensure that monitoring performance in capacity development is done in a professional and beneficial manner, with minimum disruption.

Source: Adapted from the UNDP Report (2009)

Table 7.13 denotes that skills development requirements can determine how performant and productive an organisation is expected to be (OECD Report, 2015: 15). Table 7.13 also describes that the requirements for local or international expertise could be gainful in enhancing human capital capacity development, as well as through supporting the petroleum industry development and socio-economic transformation process in the country. For example, one of the requirements illustrated in Table 7.13 specified that local or international expertise could offer direct support for services and management, based on an assessment of existing capacity and gaps. However, the assessment could be quick and partial, but it should provide an objective starting point for attracting local or international expertise. Furthermore, local, or international expertise could assist in supporting the process of petroleum industry development through developing local ability in managing capacity development programmes with the help of local or international providers.

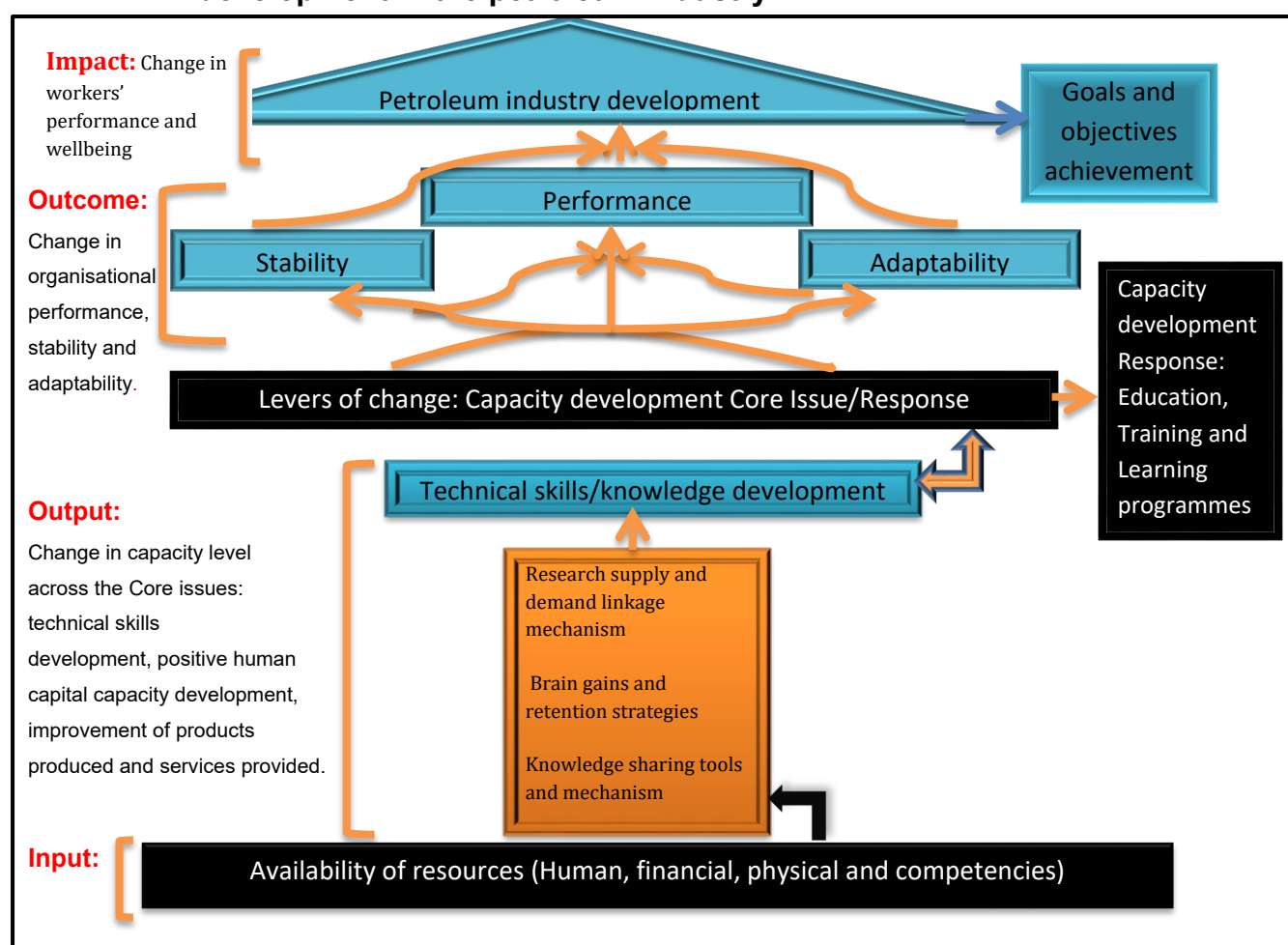
7.4.6.5 Step 5: Facilitating an active evaluation of capacity development programmes in the petroleum industry

According to the UNDP Report (2009: 32), one of the important challenges in the field of capacity development remains measuring change and results in concrete terms. Therefore, measuring capacity development impacts/success cannot be seen as an increase in input resources such as human, financial, or physical resources (availability of input resources does not guarantee their contribution to development objectives). However, the process of evaluating capacity development impacts, progress and results in the petroleum industry could be seen or reflected through changes in performance, which can be measured in terms of improved efficiency and effectiveness (the UNDP Report, 2009: 32). Nevertheless, the evaluation of outcomes could be easier to capture than the evaluation of outputs.

Therefore, the evaluation of outputs takes into account elements such as funds spent, number of workshops conducted, or number of employees trained. In the petroleum industry or in any other organisation/institution, the link between capacity development and potential impacts could also be challenging to evaluate, for the reason that it depends on the dynamics at work amongst several factors over time. Therefore, possible improvement/change from capacity development in the petroleum industry

could be seen through employees' performance or productivity. According to the UNDP Report (2009: 32), an evaluation framework of capacity development can only be useful to the extent that findings from the evaluation are absorbed and applied. Thus, Figure 7.12 illustrates a design of the framework that can be comprehensive enough to capture the key issues and that may continue to be manageable in the petroleum industry.

Figure 7.12 Framework aligned to measuring the potential effects of capacity development in the petroleum industry



Source: Adapted from the UNDP Report (2010: 7)

Figure 7.12 indicates the process of measuring the potential effects of capacity development programmes in the petroleum industry and displays the measurement of capacity development in terms of input, output, outcome and impacts that a programme of capacity development could have in the petroleum industry. It also gives

details about possible changes that capacity development could foster in terms of employees' performance and wellbeing; organisational performance, stability, and adaptability; as well as change in capacity level across the core issues related to technical skills development, positive human capital capacity development and the improvement of products produced, or services provided in the petroleum industry. According to the OECD Report (2015: 21) and the UNDP Report (2010: 8), if actionable models, principles, policies, systems, processes, and mechanisms that promote capacity development best-practice are well-managed, then the petroleum industry could gain more competitive advantages, increase performance and productivity, and improve its contribution to the national GDP or socio-economic transformation process in the country.

Thus, formulating and implementing a suitable model of capacity development programmes, such as the CDP-PUSH-Effects model, could be helpful to address the issues of scarce skills development in the petroleum industry. Furthermore, the requirements for improving policies, programmes and strategic plans are a sine qua non condition for the success of the CDP-PUSH-Effects model. Measuring the potential effects of capacity development programmes in the petroleum industry could facilitate and ensure an active sustainability of human capital capacity development and effective skills use in the petroleum industry.

7.4.6.6 Step 6: Facilitating and ensuring an active sustainability of human capital capacity development and effective skills use in the petroleum industry

According to the OECD Report (2015: 21), skills must be fully developed and used at work. However, the low or under-utilisation of existing scarce skills is likely to be a major challenge in most public and private organisations. In the context of the South African petroleum industry, the Big Push approach could facilitate and ensure an active sustainability of human capital capacity development and effective skills use in the petroleum industry. In addition, the Big Push approach can contribute to ensuring the best practice of policies and structures that support the active sustainability of human capital capacity development and effective skills use in the petroleum industry. The Big Push approach is also intended to ensure employment change swiftly due to

industrial hi-tech change and the interconnectedness of economies. Therefore, developing, retaining, and sustaining available scarce skills and ensuring their full use in the workplace could generate organisational competitive impacts such as innovation, facilitate function, operation, and the utilisation of new technologies, which are intended to support higher productivity and effective contribution to strong and inclusive economic growth (OECD, 2015: 3). Furthermore, ensuring adequate skills development and use may possibly improve the working conditions of employees and boost the earnings of individuals, as well as increase opportunities for well-being in the workplace and society.

Thus, drastic actions for sustainable human capital capacity development and effective skills use in the petroleum industry may include aspects such as continual skills development for work and life; making sure that skills developed are fully used; and encouraging stakeholders to fully support an appropriate model and process of capacity development programmes (OECD, 2015: 3). Table 3.1 displayed an understandable skills strategy, policy and indicators that could assist in developing skills for work and life, encourage firms to invest in skills development and ensure that skills are fully used in the petroleum industry. Thus, an effective use of human capital abilities is intended to ensure that goals and objectives are successfully achieved, while employees' efficiency/performance and organisational productivity can be measured in a comparison of what is produced in relation with the resources used (labour, money, time, etc.) in achieving these goals and objectives (the UNDP Report, 2010: 9-10).

Accordingly, in light of the aforementioned, the impacts of capacity development best-practice can be evaluated in terms of petroleum industry stability and adaptability. Stability can be measured through a moving description that shows organisational performance over time, while adaptability can be measured in line with organisational continuous investment for innovation and improvement, which could indicate the degree to which an organisation can decrease the volatility of performance through organisational best-practice of existing structures. In other words, adaptability refers to the ability to perform well in future conditions and meet future needs (the UNDP Report, 2010: 9-10). However, many organisations, including the petroleum industry, are currently under constant threat from business environment instabilities.

Therefore, the change of needs and current existing challenges will require organisations to invest more efforts/resources in workforce capacity development as a reaction to the speed of technological innovation. Thus, the best practice of capacity development models could help the petroleum industry to be able to anticipate and adapt its operations/activities to an ever-changing environment. Consequently, through capacity development programmes, the petroleum industry could keep improving the culture of doing things the right way in adhering to procedures that meet organisational performance standards. Necessary principles may be required, including the improvement and best practice of factors such as models of capacity development programmes and remedial or preventive approaches that facilitate scarce skills development in the petroleum industry and promote socio-economic transformation in the country.

7.4.7 Summary of Part Three

Part Three focused on the description of steps that may contribute to the best practice of the CDP-PUSH-Effects model, which intends to promote technical skills development and positive human capital capacity development in the petroleum industry. Therefore, it is expectant that the best practice of the CDP-PUSH-Effects model associated with reactive, proactive, and active approaches, as well as Push-Pull and Big Push strategies in the South African petroleum industry, may possibly generate positive effects in terms of human capital capacity development, improved organisational performance and productivity and socio-economic transformation in the country. The effects of the CDP-PUSH-Effects model might possibly include change in capacity levels across the core issues.

These include technical capacity development, functional capacity development and behavioural capacity development (positive human capital capacity development). The additional effects consist of ensuring that the skills developed are accurately and fully used, as well as policies, programmes and strategic plans are improved to ensure the retention of technically skilled workers in the petroleum industry. Efforts for the best practice of the CDP-PUSH-Effects model could contribute to eradicating technical skills drain in the petroleum industry. Thus, it can be predicted that capacity development can play a vital role in the petroleum industry. However, capacity

development programmes are what enable people to improve their abilities to do something greater than what they usually do. It gives people the ability to turn failure into success and shortages/deficiencies into sufficiency/capability. Moreover, an appropriate model of capacity development is what facilitates and motivates people in the workplace to improve and increase their skills for them to become more relevant to deal with existing and new advanced operations in the organisation. In addition, capacity development is what develops and promotes people dimensions of positive attitude, technical aptitude, moral capacity or change of productive/positive behaviour and culture, change of philosophy, etc., which make an organisation gain competitive advantages over other competitors and become more creative or innovative. Thus, positive human capital capacity development in the petroleum industry can be one of the key requirements for socio-economic transformation. However, building and developing dimensions of positive human capital capacity development are what makes the country great through the achievement of organisational vision, mission, values, and objectives.

7.5 Conclusion

In general, this chapter focussed on the formulation of the CDP-PUSH-Effects model that intends to promote technical skills development, skills waste alleviation and positive human capital capacity development in the petroleum industry. Therefore, three important sections of this chapter discussed the CDP-PUSH-Effects model as an approach to bridging the gap of technical skills shortages, skills waste and the deficit of positive human capital capacity affecting the petroleum industry. The first part of this chapter examined the background and overview of structures, models and approaches implemented in supporting or promoting capacity development programmes in South Africa and/or the South African petroleum industry.

In addition, it was indicated that South Africa has a very solid structures and legislation that define and support skills development processes in the workplace. Unfortunately, despite the existing models, approaches, structure, and legislation which are supporting skills development in the workplace, there are still critical issues related to the shortage of technical skills, skills waste and an alarming deficit of positive human capital capacity affecting the South African society, as well as public and private

organisations. The second part emphasised formulating and the description of the potential model of capacity development aligned to the improvement, development, and retention of technically skilled employees in the South African petroleum industry. Most importantly, in the process of formulating the CDP-PUSH-Effects model, three significant approaches and strategies were discussed as key pillars towards supporting the best practice of the CDP-PUSH-Effects model for technical, functional, and behavioural skills development in the petroleum industry. Therefore, a public-private partnership will be required for productive interventions in applying the CDP-PUSH-Effects model towards closing or bridging the gap of scarce skills, whether in the public or private sectors. Furthermore, reactive, proactive, and active approaches associated with the Push-Pull and Big Push strategies are suggested as key instruments, useful in developing technical skills, alleviating skills waste, and promoting positive human capital capacity development in the petroleum industry.

Lastly, Part Three of this chapter explored and discussed the indispensable steps allowing the best-practice of the CDP-PUSH-Effects model that intends to ensure the competitive advantages of the petroleum industry through an effective and efficient development of scarce skills in the petroleum industry. In addition, the competitive advantages from capacity development programmes can be gained through strategic investment in employees' skills development and retention; best practice of models of capacity development programmes; talent management; and the improvement and best practice of policies, programmes and strategic plans that support learning programmes in the workplace. Thus, the increased value of human capital capacity could have a positive influence on strategic activities and contribute to organisational performance, productivity, and economic abilities/advantages.

However, in this conclusion section, it is imperative to note and understand that no matter the amount of financial capacities/resources that an organisation or a country may have, the lack of appropriate and best practice of models of capacity development for technical, functional and behavioural capacity development in the workplace may yield limited results. In addition, developing models of capacity development without the best practice of policies, skills programmes and strategic plans that support the putting into practice of instruments/approaches/strategies of capacity development in the workplace could result in wasting efforts, time, and resources.

Nevertheless, any attempt at improving or developing a model of capacity development without stakeholders, organisational or institutional awareness and commitment to deal with the real socio-economic challenges, such as the deficit of positive human capital capacity, technical skills shortages, or skills waste in the workplace, will result in failure, waste of time, wasted efforts and resources. Therefore, as long as the need for organisational/institutional improvement, change, development and transformation is real, due to environmental volatility and technological or industrial revolution, the necessity for capacity development programmes usage in the workplace will be constantly required to ensure continuous human capital capacity development.

Moreover, since the development process comes with various problems that need solutions, capacity development in its diversity comes with practical approaches of skills development programmes that empower human capital with the abilities, talents, and knowledge to provide suitable solutions to existing developmental problems. Accordingly, it is what the government and the petroleum industry will decide to do that will turn challenges into opportunities. Consequently, it is possible that an effective and efficient best practice of capacity development programmes model, such as the CDP-PUSH-Effects model could facilitate scarce skills development in the petroleum industry and contribute to socio-economic transformation in the country.

CHAPTER 8

GENERAL CONCLUSION AND RECOMMENDATIONS

8.1. Introduction

Challenges, problems, or adverse situations are found in every area of socio-economic sectors, including the petroleum industry. Factors promoting or affecting the South African petroleum industry and socio-economic transformation in South Africa could be many. They are mostly related to the PESTIE factors (Erasmus, 2014: 108-109 and Smit 2011: 64-65). In this study, an additional key dynamic factor was explored concomitantly with the political, economic, and social factors to determine the dynamic forces that could contribute to promoting petroleum industry development and socio-economic transformation in South Africa: “Capacity development programmes”. Therefore, the aim of this study was to explore capacity development programmes for socio-economic transformation in South Africa through the case study of the South African petroleum industry.

This study focussed on discussing the matter of technical skills shortages as the most critical issue obstructing the competitiveness, productivity, and performance of the South African petroleum industry. Furthermore, this study examined skills waste and the deficit of positive human capital capacity development as critical issues affecting not only the South African petroleum industry, but also the South African society generally (including public and private organisations). Hence, capacity development programmes best practice and an appropriate developed model of capacity development were studied and suggested as one of the profitable approaches to bridging the gaps of technical skills shortages, skills waste, and the deficit of positive human capital capacity development, whether in the South African petroleum industry or in public and private organisations within the country.

According to Amadei (2020) and the OECD Report (2015: 12), capacity development can contribute to improving, upgrading, or increasing the skills, capacity, talents, ability, aptitude, or capability of people to cope with and adapt to challenging and adverse perturbations that may derive from PESTIE factor instabilities and affect systems that organisations/societies depend upon. It can also ensure employers that skills developed in the workplace are suitable and relevant to organisational needs for

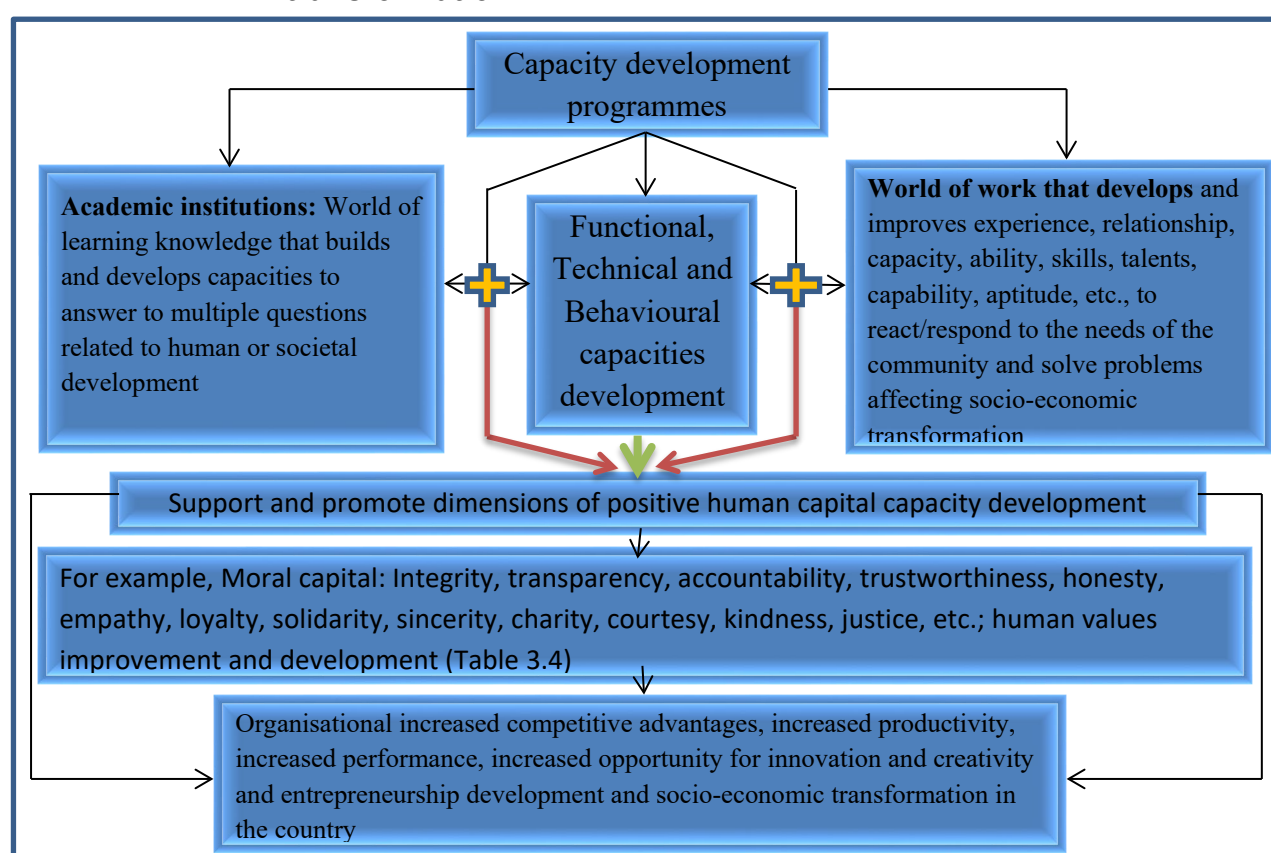
innovation, productivity, performance, and competitive advantages. In this study, capacity development programmes were also explored as a factor that could facilitate and increase employers' awareness and contribution to developing employees' capacities in area of technical skills such as welders, boilermakers, mechanical fitters and electrical mechanics, chemical plant controllers, etc., which are in high demand in the South African petroleum industry (CHIETA Regional Skills Forums, February 2020). Thus, capacity development programmes address situations related to specific issues affecting institutional, organisational, individuals, socio-economic, environmental, and infrastructure systems that may prevent the delivery of adequate community services and meeting development goals (Hanson, 2010: 1-2).

However, the most important aspect in the practice of capacity development programmes is to know or decide on the best approach or alternatives approaches that can help in bridging the gap between the existing crisis and the expected sustainable solution aligned to organisational development goals, which can pave the way to organisational development and socio-economic transformation. Thus, this study revealed that the situation of technical skills shortages, skills waste, and the deficit of positive human capital capacity whether in the public or private sectors are very alarming and critical matters, which necessitate more attention, effort, resources, and consideration from stakeholders implicated in the petroleum industry's activities.

Therefore, the outcomes of this study indicated that technical skills drain; the lack of appropriate models of capacity development and the lack of capacity development programmes best practice are amongst the factors causing technical skills shortages, which also prevent the petroleum industry from gaining competitive advantages from other world regions' competitors. In addition, the lack of programmes, policies and strategic plans best-practice and the lack of best-practice of key values such as integrity, transparency, accountability, trustworthiness, honesty, empathy, loyalty, solidarity, sincerity, charity, courtesy, kindness, justice, etc., are amongst factors causing the deficit of positive human capital capacity in the workplace. Unfortunately, technical skills shortages, skills waste and the deficit of positive human capital capacity development are amongst the very crucial factors affecting socio-economic transformation processes in the country.

This situation requires the government of South Africa, SAPIA members and partners operating in the petroleum industry to swiftly engage proactive actions that will support, on one hand, programmes, policies, and strategic plans improvement to promote scarce skills development in the petroleum industry. On the other hand, awareness, efforts, and resources will be required to build or develop an appropriate model of capacity development that could contribute to scarce skills development, minimise skills drain and prevent the detrimental risk that these challenges could cause in the petroleum industry particularly, and in the South African society in general. In addition, this study compared the findings with the literature review to outline essential recommendations and strategies that could be implemented towards improving the role that capacity development programmes could play for petroleum industry development and socio-economic transformation in the country. The role that capacity development programmes could play for socio-economic transformation can be better understood following the schematic illustration presented in Figure 8.1.

Figure 8.1 Capacity development programmes' role for socio-economic transformation



Source: Self-generated by the researcher

Capacity development programme is more effective when the world of learning and the world of work are linked (OECD, 2015). Figure 8.1 suggests that as soon as qualify people comes fresh out from academic institutions; they are almost ignorant of the new era, responsibilities, or experiences that they will embrace in the world of work. The level of education (qualification) gives them opportunity and orientation to the world of work. However, qualification is not the limit; more sustainable learning activities and more experiences will be amongst the essential requirements prior to start and develop a career journey in the workplace. Therefore, capacity development programmes could serve as a pillar, tool, or locomotive of additional new skills (functional, technical, and behavioural capacities improvement) development for new or existing workforce in the workplace.

In addition, Figure 8.1 shows the convergence, relationship, and effects that capacity development programmes could generate on human capital capacity development in the workplace and consequently, the potential socio-economic outcomes that could derive from the petroleum industry development. In terms of the research outcomes, Figure 8.1 also summarises and explains conclusions from quantitative and qualitative approaches, which were significantly converged, compared, interpreted, and discussed following the procedures indicated in Figure 5.3 (mixed methods design). Therefore, this chapter discusses the way in which the objectives of the study were achieved, based on the converged-mixed methods design. The gaps, limitations and directions for further research are considered and presented further below. This chapter ends with a schematic impact of capacity development programmes for petroleum industry and socio-economic transformation in South Africa.

8.2 General conclusions

The preceding chapter focussed on establishing the statistical evidence with the assistance of the PSL-SEM computerised software package for the quantitative study and Nvivo12 version software package and thematic analysis for the qualitative approach. This chapter demonstrates the way in which the aim and objectives of this study were achieved. The aim of this study was to explore capacity development programmes for socio-economic transformation in South Africa, through the case study of the South African petroleum industry. In effort to achieve the purpose of this study, the following objectives were examined:

- Examining the factors that contribute to socio-economic transformation in South Africa;
- Identifying the nature of capacity development programmes in the South African petroleum industry;
- Investigating how capacity development programmes can contribute to socio-economic transformation in South Africa;
- Investigating the extent to which capacity development programmes focussing on skills development have contributed to socio-economic transformation in South Africa;
- Identifying the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry;
- Exploring the international models of capacity development programmes that promote human capacity development, petroleum industry development and socio-economic transformation; and
- Developing an appropriate model of capacity development aligned to human capital capacity development for the South African petroleum industry's development and socio-economic transformation.

Therefore, questions were formulated to assist the research achieve the aforementioned objectives. These questions were used to explore relevant theories in the literature and to gather necessary information related to the aim and objectives of the study. The investigation included four major operational organisations' members of the South African petroleum industry, including SAPIA, ENGEN refinery, CHIETA and the South African Department of Energy (petroleum sub-sector). The motives for targeting these organisations were as follow:

- **SAPIA:** The South African Petroleum Industry Association (SAPIA) was targeted because of the collective interests of the entire South African

petroleum industry that it represents. In addition, SAPIA plays a strategic role in addressing a range of common issues relating to the refining, distribution, and marketing of petroleum products, as well as promoting the petroleum industry's environmental and socio-economic progress. SAPIA is also the voice of the South African petroleum industry by proactively engaging with key stakeholders, providing research information, expert advice and communicating the industry's views to the government, members of the public and media (SAPIA Report, 2015: 12-13).

- **ENGEN Refinery:** Amongst the four crude oil refineries located on the coast, ENGEN refinery was targeted due to its proximity as it is located in Durban, the same region/city where the Durban University of Technology (DUT) is situated. Moreover, ENGEN refineries as well as other crude oil refineries in the country rely on national education systems that contribute to producing a consistent pool of highly qualified technical graduates who are able to ensure and sustain petroleum industry development and performance. ENGEN refinery is actively involved in the process that supports skills training programmes of employees in the workplace. Additionally, the study-led by SAPIA concerning technical/scarcely skills shortages and for reasons of safety, reliability and environmental performance relating to the critical process plants across its member companies, including ENGEN refinery was to quantify and understand the extent of scarce and critical skills gaps and required learning interventions to breach these industry-identified skills shortages (SAPIA Report, 2016).
- **CHIETA:** The Chemical Industries Sector Education and Training Authority was a target for this study due to its linkages with the Department of Trade and Industry's strategic sub-sector, which is identified as Liquid Fuels Associated products (CHIETA Report, 2014). In addition, the petroleum sub-sector of CHIETA was significantly targeted because it is linked with other petroleum companies or industries through petroleum operations that include storage and transport, wholesale and retail, safety, and security, as well as environmental protection and conservation. Moreover, CHIETA remains presently engaged in a range of partnerships, agreements and plans to contribute to both the development of new skills for the sector, as well as the development of skills

within the existing workforce (CHIETA Report, 2014). Furthermore, CHIETA is the South African catalyst (promoter and facilitator) for enhancing skills, economic growth, and employability in different sectors of the economy, including the petroleum industry: petroleum and base chemicals skills plan for the petroleum sub-sector (CHIETA Report, 2014). Therefore, CHIETA's role is to achieve the mandate of the Chambers (Petroleum and Base Chemicals Skills Plan for the Petroleum Sub-sector) in terms of schedule 9 (a) of the SDA 97 of 1998 to consult with the sub-sectors of the Chemical Sector in areas of skills development and planning.

- **South African Department of Energy** (Petroleum sub-sector): The petroleum sub-sector of the South African Department of Energy was logically targeted in this study because the Energy Department pursues the mission to regulate and transform the petroleum sector for the provision of secure, sustainable, and affordable energy. Furthermore, the Department of Energy has the mandate to ensure and secure the sustainable provision of energy for socio-economic development (South African Department of Energy Report, 2020). Additionally, the South African Department of Energy was mostly targeted in this study because of its strategic objectives, which derive from the National Development Plan (NDP) and which envisage that by 2030, South Africa will have an energy sector that promotes economic growth and development, social equity and environmental sustainability.

Thus, its key objectives involve attaining universal access to energy; accessible, affordable, and reliable energy, especially for the poor; diversifying primary energy sources and reducing dependency on coal; good governance, which must also facilitate and encourage private sector investments in the energy sector; and environmentally responsible energy provision (South African Department of Energy Report, 2020). Moreover, the Department of Energy's Hydrocarbons and Energy Planning Branch is responsible for coal, gas, liquid fuels, energy efficiency, renewable energy, and energy planning (South African Department of Energy Report, 2020). Therefore, the Department of Energy's Hydrocarbons and Energy Planning Branch, as an active member of the South African petroleum industry, was investigated in line with its

ambition for promoting efficient manufacturing, wholesaling, and retailing in the petroleum industry.

The incentives and focus on these aforementioned organisations were to collect quality information from experienced respondents in relation with the aim and objectives defined for this study. Therefore, the recommendations for human capital capacity development and the best practice of models of capacity development programmes in the South African petroleum industry, specifically for functional, technical, and behavioural capacities development, including remarks are therefore provided in the next sections, which relate with each objective of this study.

8.2.1 Objective 1: Examining the factors that contribute to socio-economic transformation in South Africa

According to Erasmus (2014: 108-109) and Smit (2011: 64-65), the PESTIE variables are those factors that concomitantly create opportunities and threats for organisational competitive advantages and socio-economic transformation in the country. In this study, capacity development programmes were associated with political, economic, and social factors, as well as public and private sector development as essential factors that could contribute to socio-economic transformation in the country. Therefore, **in the political environment**, the outcomes of this study revealed the following:

- **ContFac1.2:** 77.6% of respondents acknowledged that government awareness and support of capacity development programmes in the petroleum industry could be imperative for socio-economic transformation in South Africa; and
- **ContFac1.3:** 78.6% of respondents approved that the improved and best practice of policies in the energy sector, including the petroleum industry could be a forefront key factor for socio-economic transformation in South Africa.

In light of these results, Mosala (2017: 330-332) and Gumede (2014: 2-6) postulated that government policy improvement and best practice are sine qua non condition for socio-economic transformation in the country. Furthermore, government legislation

improvement and best practice in the petroleum industry could facilitate scarce skills development and import essential skills that are not yet developed in the country, in attempting to bridge the gap of skills shortages affecting the South African petroleum industry.

In the Economic environment, respondents indicated that (ContFac4.2: 84.2%) capacity development programmes best-practice in the petroleum industry could create opportunities for increased productivity, competitiveness, and performance, which in turn could support economic growth, opportunities for new employment and people's lifestyle change. However, Viljoen (2016) and Manuel (2011: 90) argued that economic growth and development is a key factor for socio-economic transformation in the country. Therefore, human capital capacity development in the petroleum industry can contribute to economic growth by actively facilitating opportunities for creativity, innovation, and entrepreneurship development. Consequently, economic growth can have various effects on poverty, the employment prospects of the unemployed and broader indicators of human capital development. The extent to which economic growth reduces unemployment depends on the degree to which the unemployed are trained to participate in the growth process and share in its proceeds (Rodrik, 2007: 2 -3).

Capacity development programmes that support/promote human ability development in the workplace could be a key strategy of unemployment and poverty reduction in terms of promoting organisational development and rapid and sustained economic growth. The challenge for capacity development best-practice is to have improved policies that support skills development and the best practice of models of capacity development that promote skills development in the workplace, as well as policies that allow unemployed people to participate fully in the opportunities of skills training programmes so that they can be ready to participate in economic growth. This includes policies to make labour markets work better, remove gender inequalities and skills waste, and promote technical, functional, and behavioural skills development in the workplace.

In the social environment, respondents indicated that:

- **ContFac4.2:** 84.2% of respondents agreed that capacity development programmes best practice in the petroleum industry can create opportunities for employees' lifestyle change; and
- **ContFac5.2:** 77.6% of respondents acknowledged capacity development could promote socio-economic transformation by addressing the issue of skills development within sectors such as trade, health, education, industries, politics, housing, agriculture, transportation, communal services, and tourism and recreational improvements, etc.

Sablonnière (2017), Gobodo (2008: 1-10) and the UNDP Report (2009: 13-19) argued that capacity development in the petroleum industry or in any socio-economic sector can generate social change and transformation. Such as stated earlier, the contribution of the petroleum industry to economic growth could cause more job opportunities or facilitate increased demand for labour and in turn, increased employment that can contribute to economic growth and social wellbeing.

8.2.2 Objective 2: Identifying the nature of capacity development programmes in the South African petroleum industry

In relation to the nature of capacity development programmes in the South African petroleum industry, respondents indicated that capacity development is not yet fully implemented to bridge the gap of technical skills shortages in the petroleum industry. More interventions or actions are required to generate positive effects from capacity development programmes best-practice in the workplace. However, the outcomes of the analysis affirmed that:

- **NCDvT3.5:** 88.9% of respondents indicated that capacity development programmes could empower the workforce with required skills that can support and promote the culture of creativity, innovation, and competitiveness in the workplace (petroleum industry); and

- **NCDvT4.2:** 88.1% of respondents agreed that capacity development programmes in the petroleum industry could have strong link-effects between petroleum industry development and socio-economic transformation in South Africa.

These results imply that there could be expectations that capacity development programmes can play a significant role in the public and private sectors, by promoting leadership, management, technical and adaptive capacities development; as well as creating opportunities for human behaviour capacity development in the workplace (OECD, 2015: 4). In addition, capacity development can stimulate the ability to produce change by empowering individuals, leaders, organisations, and society with quality skills training programmes that promote greater transparency, accountability, and a more economic use of capital in the petroleum industry and in the country (UNDP, 2009: 3).

Moreover, capacity development can cause major opportunities for effective skills use in the workplace, given that leadership, managers, and workers are required to be constantly empowered with conceptual, interpersonal, behavioural, and technical skills programmes that will enable them to remain competitive, effective, and efficient in a working or technically demanding industry. Socio-economically, instability resulting from global competition and technological innovation will continually require public and private organisations to align with capacity development programmes for sustainable development and competitive advantages (Hossain and Roy, 2016: 1023).

8.2.3 Objective 3: Investigating how capacity development programmes can contribute to socio-economic transformation in South Africa

The investigation relating to the role that capacity development programmes could play for socio-economic transformation South Africa scored the following results:

- **Respondents (CDPC5.2: 100%)** fully agreed that capacity development programmes could be the engine or locomotive of socio-economic transformation in South Africa by supporting skills training programmes that

promote integrity, accountability, trustworthiness, honesty, empathy, loyalty, solidarity in the workplace, whether in the public or in the private sectors;

- **Respondents (CDPC3.1: 98.8%)** scored that at a micro-level, the performance of the petroleum industry depends to a large extent on the skills/abilities/competencies development of the workforce;
- **Respondents (CDPC3.4: 81.5%)** showed interest in that efforts and resources expended towards addressing the triple challenge (poverty, unemployment, and inequality) will be in vain out of capacity development programmes best-practice; and
- **Respondents (CDPC4.2: 75.8%)** approved that research on capacity development programmes could boost the politics of skills development for employment, skills for competitiveness, and skills for poverty reduction.

The investigation showed that capacity development programmes can contribute effectively to petroleum industry development and consequently to socio-economic transformation in South Africa. Respondents demonstrated a strong support of this objective by the fact that capacity development programmes could be an important factor of socio-economic transformation in South Africa. Therefore, this means that human capital capacity development, scientific, technological, and institutional and resource capabilities are ingredients of capacity development that could drive socio-economic transformation in the country (UNDP Report, 2011: 1-4).

Thus, capacity development interventions are expected to bring change in various socio-economic spheres. Accordingly, change may be projected on the improvement of employment policies and on the way business is done (to gain competitive advantages and avoid the risk of being left behind). In addition, change may be predictable for the improvement of operations related to human functional, behavioural, and technical capacities, as well as in the way individuals, organisations and society could strengthen and maintain capabilities to set and achieve their goals and objectives (African Development Bank Group Report, 2013: 31-42).

8.2.4 Objective 4: Investigating the extent to which capacity development programmes focussing on skills development have contributed to socio-economic transformation in South Africa

This objective investigated the extent to which capacity development programmes focussing on skills development have contributed to socio-economic transformation in South Africa. The outcomes of the analysis indicated that a successful and best-practice of policies supporting frameworks/models of capacity development programmes in the South African petroleum industry depend on the government and actors'/stakeholders' ability to work together through engaging vigorous actions that could promote the improvement of policies which support employees' skills development in the workplace (Hammond, 2011: 10). The results revealed that:

- **SCDP1.3: 89.3%** of respondents confirmed that the government and the South African petroleum industry authorities are aware that human capital capacity development could play a crucial role to promote petroleum industry development and socio-economic transformation in the country, but there could be a lack of policies best-practice in the process of implementing existing frameworks/models of capacity development that support technical skills and other scarce skills development in the petroleum industry/country, or there could be lack of appropriate best-practice of capacity development programmes in the workplace;
- **SCDP2.1: 93.9%** of respondents acknowledged that if in some areas/field of the petroleum industry, skills training programmes are effectively and successfully established or implemented, this must not be the case for the entire petroleum industry. Capacity development programmes are not covering all sub-sector of the entire South African petroleum industry, given that there are still critical issues related to technical skills shortages, skills waste and the deficit of positive human capital capacity whether in the oil field or in other socio-economic sectors of the national economy;
- **SCDP2.3: 95.0%** of respondents approved that efforts towards radical socio-economic transformation could be wasted efforts/resources out of human capital capacity/technical skills development and out of capacity development

programmes best-practice in the public or private sectors, which are supposed to promote positive human capital capacity development in the workplace or in the country as whole; and

- SCDP4.4: 91.6% of respondents indicated that there could be inadequate or insufficient budgets/funds for supporting the process of technical skills training programmes in the petroleum industry or funds are sufficiently available, but inappropriately managed in terms of promoting scarce skills development in the petroleum industry.

Thus, in light of the aforementioned, capacity development programmes focussing on skills development have not yet fully contributed to socio-economic transformation in South Africa. Persistent challenges related to technical skills shortages, skills waste, and the deficit of positive human capital capacity in the petroleum industry and in other socio-economic sectors demonstrate sufficiently that awareness, efforts, and resources are still required to improve the contribution of capacity development programmes focussing on employees' skills development for socio-economic transformation in the country. Socio-economic challenges such as corruption, unemployment, poverty, inequality, gender-based violence, xenophobia, etc., are alerting signals indicating a strong requirement for positive human capital capacity development in the entire South African society and consequently, for capacity development programmes interventions in area of moral education.

Without capacity development in the area of technical, functional and behavioural capacities, socio-economic transformation in South Africa may seem to be impossible. However, actions need to be taken concomitantly by the government and the petroleum industry to improve the interventions and contribution of capacity development programmes for human capital capacity development (Department of Higher Education and Training Annual Report, 2016/2017: 16 and Bloch, 2000). Furthermore, in facilitating capacity development interventions in the petroleum industry, the petroleum industry together with the South African government should improve or develop mechanisms that support the process of monitoring the cost of capacity development services (cost of technical skills training programmes) to alleviate the challenges affecting local or international providers of capacity

development programmes (Machika, 2014: 4). Acting in that way could result in planning accurately for holistic scarce skills development in the petroleum industry to create and promote opportunities for work-related training programmes without gender-based discrimination in the workplace. Possibly, government interventions in effort to support and promote scarce skills development in the petroleum industry (workplace) could be a sine qua non condition for socio-economic transformation in the country. Consequently, capacity development programmes, if well implemented could generate the emergence of small business (entrepreneurship) development (The OECD Report, 2015: 5; Viljoen, 2016 and Manuel, 2011: 90).

8.2.5 Objective 5: Identifying the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry

It was stated earlier that challenges affecting the socio-economic transformation process in the country are related to the PESTIE factors (Smit, 2011: 64-65). In addition to the PESTIE factors, the outcomes of this study revealed that the lack of capacity development programmes best-practice as well as the lack of an appropriate model of capacity development in the workplace has had a detrimental effect on technical, functional, and behavioural capacities development in the public and private sectors.

In other words, the lack of capacity development programmes best-practice in the petroleum industry has contributed to a persistent situation of technical skills shortages, skills waste and the deficit of positive human capital capacity development affecting particularly the petroleum industry development, and generally the South African society. Moreover, the outcomes of the analysis indicated that:

- **CCDP1.3: 83.4%** of respondents revealed that the lack of policies best practice in supporting capacity development programmes could be one of the key barriers affecting technical skills development in the petroleum industry;

- **CCDP 2.1: 90.5%** of respondents indicated that technical skills shortages in the petroleum industry could be related to the lack of capacity development programmes best-practice;
- **CCDP2.2: 91.7%** of respondents acknowledged that the petroleum industry is not fully addressing and supporting capacity development programmes as a tool that can stimulate human capital capacity development in the workplace;
- **CCDP2.3: 92.1%** of respondents agreed that technical skills shortages in the petroleum industry are the result of neglecting or lacking an appropriate model of capacity development as a vital tool to supporting employees' technical skills development; and
- **CCDP5.1: 92.8%** of respondents recommended that capacity development programmes need to be sufficiently explored, promoted, and applied to strengthening the abilities of employees in areas of technical, functional and behavioural capacities development in the petroleum industry.

To this extent, after setting this objective, everything (awareness, efforts, and resources) must be done to confront/tackle the barriers affecting technical skills development, skills waste alleviation and positive human capital capacity development in public and private organisations; and deal with them immediately. Consequently, based on the statistics presented further above, it can be argued that the government of South Africa could be held responsible of lacking considerable awareness and ability to enforce policies that promote positive human capital capacity development, technical skills development, and retention, as well as other scarce skills development in the petroleum industry or in the country. Furthermore, the South African petroleum industry could also be held responsible of not sufficiently, adequately, or appropriately working on the improvement and development of a suitable best-practice model of capacity development that could be applicable to bridging the gaps of technical skills shortages, the retention of technical skilled employees, skills waste, and the deficit of positive human capital capacity.

Insufficient funds or available funds mismanagement and the lack of appropriate best-practice of models of capacity development in the petroleum industry are amongst the most critical challenges affecting the process of human capital capacity development in the workplace. In addition, unawareness, or inadequate implementation of policies to support the retention of people with technical skills, whether in the petroleum industry or in other socio-economic sectors is a critical challenge, for which more attention from the stakeholders is necessitated to bridge the gap of skills waste and technical skills drain from the country. All these challenges and particularly, the mismanagement or mal-administration of funds/budget allocated to sponsor technical skills development programmes in the petroleum industry could result in a maintainable situation of technical skills shortages/drain in the country (United Way of Calgary and Area Report, 2011: 11-12 and Smit, 2016: 68).

Therefore, it can be acknowledged that technical skills shortages in the petroleum industry could have many sources/causes. Firstly, technical skills shortages could be associated with PESTIE factor instabilities; the lack of motivation from employees' interest to participate in technical skills training programmes and the lack of sustainable support for mentorship programmes or capacity development programmes providers (Smit, 2016: 59, 68, 71). Additionally, technical skills shortages could be related to the lack of appropriate mechanisms for monitoring and evaluating the process of capacity development programmes in the petroleum industry (Williams, 2016: 47 and Smit, 2011: 79). Moreover, employees' resistance to learning programmes and insufficient efforts from various stakeholders (public-private partners) in promoting capacity development as a tool that can reduce or bridge the gap of technical skills shortages and promote scarce skills development in the petroleum industry could be amongst the critical factors.

Thus, companies or businesses in the country are required to incorporate capacity development programmes into their structures or improve the dynamism of existing structures of capacity development to support employees' efforts for innovation, creativity, competitiveness, productivity, and performance. Accordingly, public, and private organisations, which are neglecting or lacking capacity development programmes best practice, could also suffer a lack of innovation, creativity, and competitiveness. In other words, neglecting the improvement and best practice of policies that support human capital capacity development, as well as neglecting

capacity development programmes best-practice in the workplace could affect efforts/resources committed to supporting socio-economic transformation in the country.

8.2.6 Objective 6: Exploring the international models of capacity development programmes that promote human capital capacity development, petroleum industry development and socio-economic transformation

This objective consisted of exploring the international models of capacity development programmes that promote human capital capacity development, petroleum industry development and socio-economic transformation. The outcomes of the analysis revealed that:

- **IMCD3.1: 79.2%** of respondents agreed that an improved capacity development model/framework based on the international one could have a sound impact in terms of promoting petroleum industry value chain activities such as crude oil, head office, refinery, distribution, storage, wholesale and retail activities upgrading;
- **IMCD3.2: 86.4%** of respondents approved that international models of capacity development could have a positive influence on the development of local human capital capacity in various related industries;
- **IMCD4.1: 84.1 %** of respondents were favourable in that capacity development models could be used as a reference for the way in which the petroleum industry may evaluate capacity development services in terms of skills acquisition and practice from the providers of capacity development programmes; and
- **IMCD5.1: 82.0%** of respondents confirmed that the South African petroleum industry would need an appropriate framework/model of capacity development that may be similar to developed petroleum industries from other world regions, for the reason of competitive advantage.

In relation to this objective, it is important to understand that continuous investments in human capital capacity development by considering models of capacity development from other world regions, could create the opportunity to pair South African firms and employees with leading international companies in terms of functional, technical, and behavioural capacities development (Peek, 2008: 3 and Kim, 2013). The effects of adapting local models of capacity development programmes to international ones could be profitable in the way that local models of capacity development could generate improvements and the development of socio-economic activities, whether in the public or private sectors.

According to Kim, (2013), Rothman (2012: 1-2), Ovadia, (2016) and Peek, (2008: 51), the potential effects from promoting human capital capacity development in the petroleum industry or in any other business can be a significant investment that could promote productivity, performance, and competitiveness. Businesses or organisations that have innovative and creative vision, are required to adapt their structures with an appropriate model of skills development programmes for competitive advantages.

8.2.7 Objective 7: Developing an appropriate model of capacity development aligned to human capital capacity development for the South African petroleum industry's development and socio-economic transformation

Respondents were assertive in that developing an appropriate model of capacity development in the South African petroleum industry could generate sound impacts linked to technical skills development; ensure the retention of technically skilled employees in the workplace; alleviate skills waste; and encourage positive human capital capacity development. The results of the analysis indicated that:

- **ACDM2.1: 73.7%** of respondents declared that the CDP-PUSH-Effects model (suggested by the researcher in this study) could facilitate local and international experts of capacity development programmes to work together for the purpose of reinforcing an active partnership between government' Department of Energy, financial institutions, the petroleum industry, skills training programmes providers and many more, to imperatively improve/develop and ensure the best practice of models of capacity

development that promote technical skills (scarce skills) development in the workplace, as well as to supporting/financing capacity development programmes activities in the South African petroleum industry;

- **ACDM2.2: 81.1%** of respondents approved that the CDP-PUSH-Effects model could facilitate, assist and guide local experts of capacity development programmes to produce/generate results, which could be similar to those seen in developed petroleum industries, in terms of technical skills or scarce skills development in the South African petroleum industry;
- **ACDM4.1: 79.4%** of respondents agreed that the CDP-PUSH-Effects model could facilitate and generate greater opportunities in training and transferring technical skills (knowledge), based on the petroleum industry requirements or needs for capacity development in areas of skills shortages;
- **ACDM4.3: 80.6%** of respondents approved that the CDP-PUSH-Effects model should be applied to facilitate technical skills and other scarce skills development by taking into consideration employees' specific skills background and the experience gained in the workplace.

Furthermore, respondents postulated that the CDP-PUSH-Effects model could facilitate sustainable solutions to existing/old problems aligned to skills shortages in the petroleum industry and contribute to economic growth in the country. This implies that an improved/developed model of capacity development, such as the CDP-PUSH-Effects model could assist facilitating the review of policies that support skills development in the petroleum industry and to facilitating the employment of foreign experts in closing the gap of skills shortages in the petroleum industry. In addition, the CDP-PUSH-Effects model could also assist about planning or campaigning to increase the awareness of stakeholders and address the real issues of technical skills shortages affecting the petroleum industry. The objective of such a campaign is to ensure sustainable human capital capacity development now and into the future.

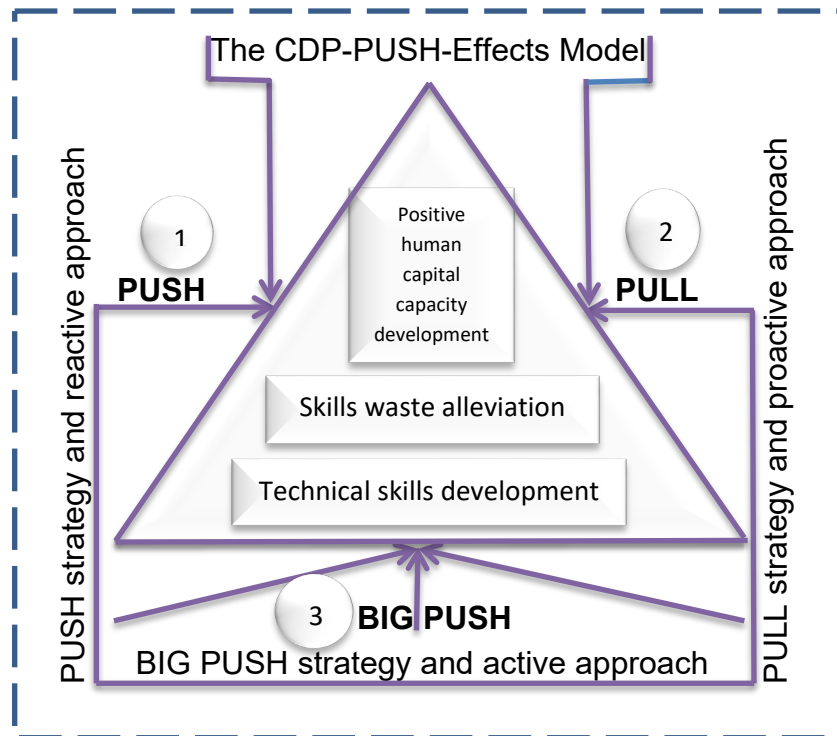
8.2.8 A Profitable/appropriate approach to solving or closing the gap of technical skills shortages in the South African petroleum industry: “The CDP-PUSH-Effects Model”

In this study, the researcher attempted to build a formula that could assist in bridging the gap of scarce skills development in the petroleum industry (Figure 7.5). Therefore, the profitable or appropriate approach to solving or closing the gap of technical skills shortages in the South African petroleum industry refers to the following formula:

*The CDP-PUSH-Effects model = (Push Strategy + Reactive Approach) + (Pull Strategy + Proactive Approach) + (Big Push Strategy + Active Approach). This formula was abridged as follow: **CDP-PUSH-Effects model = PSRA + PSPA + BPSAA.***

This formula suggests that the CDP-PUSH-Effects model involves three techniques or strategies, which consist of the PUSH strategy, PULL strategy and Big PUSH strategy. Therefore, each strategy is respectively associated with the reactive, proactive, and active approaches. The CDP-PUSH-Effects model, in some cases, can be applied as a holistic approach to solving or closing the gap of technical skills shortages in the petroleum industry. In other cases, each strategy can be applied independently. However, Figure 8.2 displays the Push, Pull and Big push strategies as components of the CDP-PUSH-Effects model, which are associated or related with approaches that can assist in bridging the gaps of scarce skills in the petroleum industry.

Figure 8.2 Profitable/appropriate approaches to promoting scarce skills development in the South African petroleum industry



Source: Self-generated by the researcher

Figure 8.2 is linked to Figure 7.5. It is simply representing an approach that can be identify as the “Triangulation Approach”, which is suggested by the researcher to the South African petroleum industry to develop technical skills, alleviate skills waste and promote positive human capital capacity development. Figures 7.3 and 7.4, as well as Tables 7.4 and 7.5 discussed in the preceding chapter (seven/7), defined, or provided a most significant understanding on strategies to be implemented in relation to the triangulation approach for technical skills development in the South African petroleum industry. Thus, the understanding and description of the implementation of each strategy are explained as follows:

- I. ***PUSH Strategy + Reactive Approach (PSRA):*** The PUSH strategy could be applied as a reactive approach to tackling skills shortages in the petroleum industry. This refers to a traditional approach of employees’ skills training programmes, which can be generally termed as reactionary, driven by the tactical delivery of technical skills training programmes, where skills training is seen as an event-oriented activity. A Push strategy is a promotional strategy where organisations/institutions attempt to lead their employees to

learning activities via various techniques of skills training programmes (Robertson and Thompson, 2019).

Therefore, capacity development could generate profitable effects on employees' productivity. Organisations/institutions often use a PUSH strategy when there is need for technological competitiveness, socio-economic sustainable development, environmental changes, products or services development, innovation and for positioning the organisation/institution at a level that differs to those of other competitors in the industry. A PUSH strategy can be especially beneficial for new skills/knowledge development that is not well-established or for new equipment/technologies being introduced and that need supplementary required capacities/skills.

II. *PULL Strategy + Proactive Approach (PSPA)*: A PULL strategy could be applied as a proactive approach (taking the initiative) in developing technical skills in the petroleum industry. This refers to all learning activities, taking into account the petroleum industry strategy on developing employees' competencies.

This strategy includes mass media promotions, word-of-mouth referrals and advertised areas of need for human capital capacity development in the workplace (Joseph, 2019). The PULL strategy attempts to create a preventive situation where environmental instabilities and changes can affect the organisation in one way or another. Capacity development programmes could assist the organisation through improving its ability in participative decision-making, responsibility sharing, and through facilitating the channel of information, making it available to employees.

Organisations/institutions will/may use a PULL strategy when they know the type of skills training programmes (capacities, skills, talents) they are looking for or the problem that they want to preventively solve. In a PULL strategy, the idea is to attract and establish necessary skills training programmes, following organisational/institutional requirements for capacity development in areas of shortage of capacities.

A PULL strategy is an approach that involves the promotion of capacity development programme efforts amongst stakeholders, whether in the workplace or in the external centre of capacity development programmes.

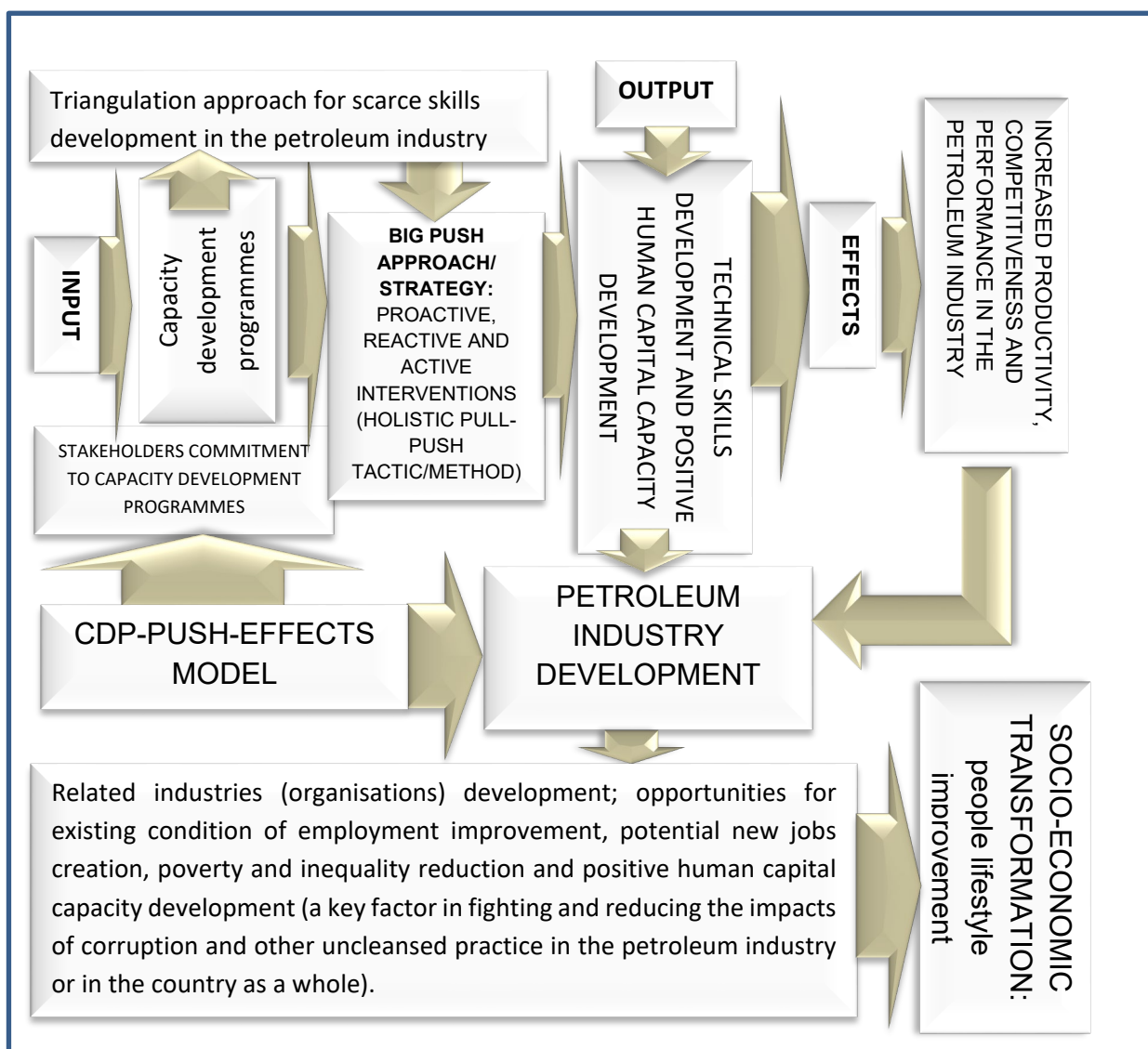
III. *BIG PUSH Strategy + Active Approach (BPSAA)*: The BIG PUSH strategy could be applied as an active approach for technical skills development in the petroleum industry. It involves a learning approach where trainees will be playing a leading role in learning by exploring issues and situational problems under the guidance of a facilitator. Through this approach, trainees who participate in a learning process will be playing the part of asking questions, searching for answers and interpreting various observations made during the process. As an active strategy, the BIG PUSH approach could possibly be applied as a line of attack in confronting challenges of technical skills shortages affecting the South African petroleum industry (Joseph, 2019 and Robertson, 2019).

This strategy includes promoting positive human capital capacity development, whether in public or private organisations, and supports an understanding that business failure, skills shortages and the deficit of positive human capital capacity can produce a need for concerted policy-led efforts to get periodic processes of human capital capacity development and organisational/institutional capacity development underway, or to accelerate it. The BIG PUSH strategy advocates that model of capacity development must not only emphasis on skilling or training people, but also improving/promoting learning infrastructure development in the workplace, and that any model of capacity development must be appropriately applicable in linkage with requirements for scarce skills development within the organisation.

In light of the aforementioned, it is logical that the successful usage of the CDP-PUSH-Effects model in the South African petroleum industry could be applied as a holistic or triangulation strategy/approach to accelerate the process of bridging the gap of technical skills shortages in the petroleum industry (the BIG PUSH approach). Depending on the type of skills development required by the organisation, it can be convenient or suitable that each strategy can also be applied separately.

However, in the case of the South African petroleum industry, the BIG PUSH strategy or approach could be suggested as a suitable/appropriate approach to developing technical skills and positive human capital capacity and facilitate the retention of technically skilled employees in the South African petroleum industry. In addition, the CDP-PUSH-Effects model could contribute on the upgrading process of learning infrastructure in the workplace. Thus, the possible effects of applying the BIG PUSH approach to developing scarce skills in the South African petroleum industry are presented in Figure 8.

Figure 8.3 Potential effects of the CDP-PUSH-Effects approach on scarce skills development in the South African petroleum industry



Source: Self-generated by the researcher

From Figure 8.3, the following lessons are necessary to be considered by stakeholders in the petroleum industry in terms of capacity development impacts in the petroleum industry:

- Capacity development interventions often focus on the supply (Push strategy) of services, rather than the demand (Pull strategy). There should be a comprehensive approach (Push-Pull strategies or Big Push approach) to capacity development interventions, which considers strengthening both supply/Push (i.e., information and services) and demand/Pull (employees' empowerment, knowledge of legal rights and where to access services) to maximising the impact of technical skills development or retention prevention and response efforts;
- Different people of different functions and specialisation levels, require diverse knowledge and skills at different stages of implementation. Capacity development plans should adapt/shape interventions accordingly and ensure that the right individuals are receiving the right inputs according to their roles and where they are in the roll-out of the programme;
- Encouragement for employees' participation in skills training programmes is an important motivating factor/force. These can include improving infrastructure of skills development in the workplace, the working conditions of employees and the work itself, as well as building-in time during the workday for sharing and learning;
- Determination to achieve organisational and policy changes in terms of capacity development best-practice will not be effective without outlining the roles and responsibilities of individuals and institutions with an official mandate to respond; the allocation of adequate funds; and the installation of systematised monitoring mechanisms based on technical skills development and retention. Gathering the support of leadership will be essential to fostering capacity development and sustaining efforts for continued petroleum industry development and socio-economic transformation;

- Capacity development investments have tended to focus primarily on skills training programmes without other necessary and complementary interventions. Capacity development should also contribute to strengthening multi-sectorial referrals, infrastructure and systems, data collection, continuing monitoring for improvements and partnerships and collaboration with partner groups and public or private organisations, as well as other key elements;
- The design and development of skills training curricula and processes often ignore expertise in educational consciousness and adult learning. It is also common for technical experts and facilitators that are not skill-trained to deliver the training. Successful training requires first and foremost, a sound and consistent approach and skilled trainers; and
- The slow pace of developing sustainable capacity development is often at probabilities with the pressure to demonstrate progress quickly to beneficiaries and donors. However, research has shown that the value of investing in organisations, employees and processes can lead to lasting social change.

8.3 Summary

This chapter concludes by demonstrating the way in which the aim and objectives of the study were achieved based on the converged-mixed methods design. It presents and summarises the role that capacity development programmes could play for petroleum industry development and socio-economic transformation in South Africa, via the South African petroleum industry. In addition, this chapter discloses the motives that led the researcher to targeting organisational members of the South African Petroleum Industry Association (SAPIA) to gather data. This valuable information was examined and analysed following the objectives defined for this study.

Thus, the research outcomes grounded on each objective revealed the necessary steps to be undertaken in applying capacity development programmes as one of the useful approaches towards promoting socio-economic transformation process in South Africa. This process aimed at contributing to the South African petroleum industry's performance and productivity. Therefore, a formula/approach was

developed in this study to promote positive human capital capacity development in the workplace, thereby closing the gap of technical skills shortages and skills waste in the petroleum industry.

8.4 Conclusion of the study

It is a touch challenging by means of knowledge, skills, talents, capacity, capability, etc., to do something with confidence that gives value to something expectant/hopeful. In other words, what makes something have value, look fabulous or attractive and to work as it should be is the skills, ideas, talents, abilities, capacities, capabilities, etc., that human capital applies to make things work. These attributes are also necessary to look at the way in which people should perceive and use it. However, the expectations to perceive change in the petroleum industry for socio-economic transformation in the country depend largely on human capital capacity, skills, ability, capability, ideas, aptitude, and talent development. Capacity development programmes are therefore the engine or locomotive that promotes functional, behavioural, and technical (human capital) capacities development in the workplace.

Thus, this study explored the role of capacity development programmes in the petroleum industry for socio-economic transformation in South Africa, using the case study of the South African petroleum industry. Therefore, this study attests that in South Africa, there is a solid foundation of capacity development structures in the public and private sectors, including the South African petroleum industry. Unfortunately, although the solid foundation of structures of capacity development is strongly grounded, the pillars that support the best practice of capacity development programmes in the workplace are failing to sustainably promote technical skills development, given that the South African petroleum industry continually experiences critical technical skills shortages.

Furthermore, skills waste and the deficit of positive human capital capacity development are dramatically affecting the South African society. In this study, the political, economic, and social components of the PESTIE factors that create opportunities and threats for organisational development were explored. This process allowed the researcher to assess the possible effects of capacity development programmes best-practice on scarce skills development in the workplace for the

petroleum industry's competitive advantage and socio-economic transformation in the country. In light of the aforementioned, it can be declared that capacity development programmes have the ability to bring change; to do something better or innovative from the existing situation; and to turn the state of current affairs into a power generator of transformation in society. However, this process will require an awareness ability of the best-practice approach that can promote scarce skills development in the petroleum industry. Most leaders, employers, managers, and employees in the workplace are lacking the indispensable values that can contribute to environmental and societal transformation. These values are described in Table 3.4 (Dimensions of positive human capital capacity development), including values such as integrity, transparency, accountability, trustworthiness, honesty, empathy, loyalty, solidarity, sincerity, charity, courtesy, kindness, justice, etc.

Unfortunately, technical skills development alone, without behavioural (moral values or positive human capital capacity) capacity development cannot promote the petroleum industry development and socio-economic transformation process. Hence, it can be assumed that capacity development structures and systems in the workplace are failing to bridge the gap of technical skills shortages in the petroleum industry, not only because of the lack of financial resources; but also, for many other reasons. Respondents indicated that financial resources are not a fundamental issue in developing scarce skills in the petroleum industry. Therefore, the deficit of positive human capital capacity and the lack of awareness of the best practice of capacity development in the workplace could be amongst the causes affecting scarce skills development in the petroleum industry.

However, without the promotion of positive human capital capacity development in the workplace, socio-economic transformation would be questionable, if not impossible. This study revealed a critical requirement for technical skills development and robust learning infrastructure improvement with appropriate learning interventions to ensure the development and sustainability of scarce skills in the petroleum industry. In addition, research conducted across South African petroleum organisations to quantify and understand the extent to which scarce skills development is required, or the need for learning interventions, was indispensable in bridging the gap in these industry-identified skills shortages/challenges.

Moreover, the research findings showed that petroleum industry employers have high requirements for a more technically skilled workforce. Therefore, by exploring matters related to the scarce skills challenges affecting the South African society and petroleum industry, a deficiency in positive human capital capacity (Lack of awareness capacity) in various structural levels and pillars that support the process of scarce skills development in the public and private sectors was found. This study identified key factors that are negatively impacting structures of capacity development and human capital capacity development in the workplace. The deficit in positive human capital capacity, whether in the public or private sectors, appears to be one of the major factors fuelling the lack of awareness for capacity development programmes best-practice in the petroleum industry. In other words, the alarm concerning issues like technical skills shortages, skills waste, or positive human capital capacity deficiency in the country in general, and particularly in the petroleum industry, is not new. This concern is well known amongst most stakeholders operating in the South African petroleum industry.

However, little effort has been made to campaign in favour of scarce skills development to bridge the gaps. Unfortunately, there is still no awareness campaign, no mobilisation of resources and no dynamic actions similar to that put in place by the South African government and private organisations to tackle the COVID-19 pandemic. Resources have been brought together to energetically confront the socio-economic challenges affecting socio-economic transformation in the country. Moreover, it was indicated that structures of capacity development programmes in the petroleum industry are challenged by the lack of policy best-practice and a lack of learning infrastructure improvement with appropriate learning interventions to ensure the development, retention, and sustainability of scarce skills (technical skills) in the sector. Consequently, the lack of awareness regarding best-practice and improvement of policies and models of capacity development in the workplace is affecting the improvement and development of structures and pillars that support relevant capacity development programmes.

The battle against the deficit of positive human capital capacity, skills waste and technical skills shortages in the petroleum industry requires collective efforts and support similar to that of the COVID-19 pandemic. Accordingly, attempts to close the gap of scarce skills must be demonstrated by strong actions that illustrate the

willingness, readiness and commitment of stakeholders, policy-makers and decision-makers involved in the business of petroleum activities in the country. Therefore, role-players/stakeholders in the petroleum industry have an important role to play towards supporting the mechanisms/structures that promote the development of scarce skills in the workplace. In addition, capacity development programmes, if well implemented, could create a strong link between human capital capacity development, employees' job-related performance, increased organisational productivity, the petroleum industry's competitive advantages and socio-economic transformation. Accordingly, in the country and particularly in the petroleum industry, the process to improve, develop or transform socio-economic activities must commence by improving and developing human capital capacity.

Moreover, the approach for a successful best-practice of capacity development programmes must involve a proactive, reactive and active partnership between public and private stakeholders involved in the petroleum industry. Such partnerships could guarantee an effective and efficient application of available models of capacity development programmes in the workplace. As a result, government interventions in terms of policies, programmes and strategic plan improvements could be a sine qua non condition to closing the gaps of technical skills shortages, skills waste, and the deficit of positive human capital capacity in the petroleum industry. Finally, this study has demonstrated that capacity development programmes best-practice in the petroleum industry could be a solution for technical, functional, and behavioural capacity development.

In addition, this study showed that consideration to the dimension of positive human capital capacity development; the best-practice of models of capacity development; the best-practice of policies, programmes, and strategic plans improvement in the petroleum industry, as well as in other socio-economic sectors, could generate direct, indirect, and induced socio-economic impacts through human capital capacity development, via private and public sector capacity development in the country. Capacity development programmes could produce men and women of value, fearing and respecting the rule of law; men and women of value who cling to the truth, transparency and hate dishonest gain in the workplace.

8.5 Recommendations

There are many critical issues pertaining to the philosophy behind a capacity development approach to dealing with technical skills shortages, skills waste and the deficit of positive human capital capacity affecting public and private organisations in the country. The underlying assumption for the most part is that there are critical issues related to functional, behavioural, and technical skills deficiencies from people that are leading, managing and/or operating public or private organisations, which makes systems or structures dysfunctional. However, capacity development programmes best-practice turns what is dysfunctional into functional. Therefore, in this study, the CDP-PUSH-Effects model was built as a strategic approach suitable for developing essential skills that can de-colonise systems, structures, organisations, or institutions from the indigenous towards an innovative way of enhancing capacity development in the workplace, with operations that can contribute to socio-economic transformation in the country.

However, respondents recommended that the best-practice of capacity development programmes in the workplace should mostly emphasise improving the holistic dimensions of positive human capital capacity development, including moral capital capacity development, aesthetic capital, human capital, human abilities, human potentials and spiritual capital capacities development (Table 3.4). In Africa, and particularly in South Africa, moral capital capacity and human capital ability development should be at the forefront of capacity development programmes due to several prevalent malpractices such as corruption, nepotism, patronage, racial discrimination, etc., which are affecting socio-economic transformation processes on the continent (particularly in South Africa).

Consequently, political leaders, managers, and operational employees from different levels of decision-making should be targeted in the fight against the decline of behavioural capacity or the deficit of positive human capital capacity, technical skills shortages, skills waste, as well as dysfunctional systems and structures. There should be improved legislation, regulations and policies that compel every individual in any position of decision-making to participate in moral (behavioural capacity) skills training programmes, as well as the development of different other functional or technical skills, which are indispensable for organisational/institutional development.

Accordingly, dimensions of positive human capital capacity development (Table 3.4) should rely on an appropriate model of capacity development that integrates and promotes (does not exclude) the provision of scarce skills development by using local and international expertise. Additional efforts and resources are required to ensure the best practice of capacity development programmes in the public and private sectors.

- **In the public sector:** the government should focus on improving and developing policies, programmes and strategic plans that promote strategic guidance for scarce skills development in the workplace. Policy-makers should not only improve or develop policies to support capacity development programmes best-practice in the workplace, but also importantly ensure that policies, programmes and strategic plans are well implemented to securing scarce skills development in the petroleum industry. Government should continually ensure the best practice and development of existing actively skilled employees for better performance, competitive advantages, and productivity improvement in the workplace.
- **In the private sector:** in this fourth industrial revolution, employees should be responsible for their own skills development. They need to be empowered through enhancing their functional, behavioural, and technical skills towards their relevance to petroleum industry development and socio-economic transformation in the country. Employees should also participate in the process of improving their skills based on voluntarism and self-sufficiency. More transparency in the management of financial resources could be necessary to sponsor technical skills development in the petroleum industry.

However, in some cases, employees cannot be self-sufficient in avoiding skills shortages, skills waste and the deficit of positive behavioural capacities and employers, public and private stakeholders cannot be side-stepped in the process of scarce skills development in the workplace. Generally, the idea is that it is very important that capacity development in the workplace should play a key role by involving stakeholders in the process of de-colonising structures or systems of skills development and retention by applying a flexible model of scarce skills development in the workplace. With today's economic variations, whether in public or private

organisations, more investment should be directed towards human capital capacity development for businesses to survive in the dynamic environment and to achieve competitive advantages. Human capital capacity development in any organisation, including the South African petroleum industry, should be of immense priority and thus has to become a very important item on the development agenda. The South African petroleum industry should have much concern with the development of human capital capacity because companies' members of SAPIA can achieve competitive advantages through the effective development and utilisation of its human resources.

The waves of technological or industrial revolution force communities to adapt themselves by assimilating the required skills/abilities/talent development so that they can inclusively make a difference and escape the risk of being left behind by other competitors. The skills value increased/added to human capital capacity can be a solid strategy that can make a difference between organisations, given that it is difficult for competitors to duplicate the same workforce in the way they can duplicate a product or service to their respective ends. Therefore, organisations are encouraged to improve the performance of employees in the workplace. The contributions of human capital capacity development in the South African petroleum industry could be perceived as follows:

- Human capital capacity development could facilitate public and private organisations towards better decision-making, as well as generate creative and innovative ideas; and
- Human capital capacity development could facilitate the analysis of competitive strategy or organisational business strategy and create or develop a complete model of capacity development in the workplace. Developed models of capacity development could also facilitate the improvement of employment relationships and conditions and facilitate strong support for long-term building/developing of core competencies and intuiting capabilities.

Therefore, it is expected that capacity development programmes in the workplace, including public and private organisations, could profitably promote positive human capital capacity development through the improvement of values such as integrity,

accountability, trustworthiness, honesty, empathy, loyalty, and solidarity in the workplace. In addition, capacity development programmes could influence skills development within sectors such as trade, health, education, industries, politics, housing, agriculture, transportation, communal services and tourism and recreational improvements. Thus, additional recommendations linked to the best practice of the CDP-PUSH-Effects model (that comprises the BIG PUSH strategy or approach) for successful scarce skills development in the South African petroleum industry involve the following:

- **Attracting and developing talent through appropriate remuneration systems:** In an increasingly competitive global market for limited skills, it is significant that the South African petroleum industry should provide an appropriate remuneration policy to attract, retain and motivate the right calibre of employee;
- **Nurturing future potential talent:** Secure, through capacity development programmes best-practice, a pipeline of future talent. The South African petroleum industry will have to continue to invest significantly in skills development for more and new operations development. Initiatives must include a range of developed literacy skills in line with scarce skills education in the workplace, including skills development initiatives for artisans, engineers, scientists, and chartered accountants, etc;
- **Critical importance:** Establishing a strong and profitable partnerships to build and develop a broader pool of skills in the areas in which there are needs for increasing operations;
- **Developing and training existing talent:** The South African petroleum industry will have to make good progress with internal development and training programmes aimed at raising active competency levels, developing technical skills and enhancing leadership effectiveness;

- **Developing a holistic accelerated skills development approach (the Big Push approach):** in providing business-focused and timely delivery of future talent, particularly at a strategic leadership level;
- **Delivering a refined employee value proposition:** The skills, capabilities and experience acquired and developed should assist employees to bring more vitality to the business. The business should offer a unique employee value proposition and a great place to work. Employers are required to continue to invest in a range of initiatives to ensure that the South African petroleum industry remains a dynamic, technology-driven organisation that develops and attracts talented, values-driven, high-performing people;
- **Internationally, the South African petroleum industry should be recognised based on the following criteria:** A dynamic technology-driven sector that promotes diverse, talented people with a pioneering spirit; high-performing leaders who create an environment that inspires employees to be the best that they can be; a values-driven high-performing culture characterised by goal clarity and alignment, empowered accountability, teamwork and collaboration, stakeholder focus and inspirational leadership; creating opportunities and supporting the improvement of rewards systems for various challenging career, with opportunities for talented and engaged people to grow into high-performing employees who are rewarded competitively;
- **Maintaining positive employee relations:** The South African petroleum industry should particularly develop and maintain a partnership approach to employee relations that promotes an employee relations culture which encourages employees to engage and voice their opinions. Maintain fair, open, and constructive relationships with all employees within the legal frameworks of the country. Regularly review and update employee relations policies in line with business and legislative requirements; and
- **Vision, mission, goals, and objectives improvement:** The South African petroleum industry should review and improve the vision, mission, goals and

objectives related to the development of technical skills and other scarce skills in the workplace. The review should include policies, programmes and strategic plans that define activities related to capacity development programmes in the petroleum industry.

Therefore, as South Africa is facing multiple socio-economic challenges (comprising technical skills shortages, skills waste, positive human capital capacity deficiency, corruption, gender-based violence, inequality, poverty, unemployment, xenophobia, etc. (including the current COVID-19 pandemic), it is imperative that the government and the petroleum industry, as well as other public and private partners, should invest more resources in developing technical, functional and behavioural capacities so that people can be able to face or deal with sudden adverse situations.

8.6 Recommendations for further Research

This research study explored capacity development programmes for socio-economic transformation in South Africa through the case study of the South African petroleum industry. Due to the scope of the study, further research should be undertaken on various aspects of capacity development programmes in public and private workplaces, particularly in the South African petroleum industry, which were not significantly explored. Many organisations, including the South African petroleum industry, have capacity development, but there is little ability to evaluate if it is done appropriately and effectively. Therefore, research should be conducted in assessing the ability to evaluate the effectiveness of capacity development best-practice in the petroleum industry, given that technical skills shortages, skills waste, and the deficit of positive human capital capacity remain prevalent issues in most public and private organisations.

Capacity development in this study was designed to support technical skills development and retention, skills waste alleviation and the promotion of positive human capital capacity development in the workplace. It was not designed to cure systems and structures of capacity development in South Africa. Therefore, a research study should be focused on evaluating the challenges affecting the systems and structures of capacity development in the South African petroleum industry.

In addition, research should be continually conducted to improve models of capacity development in the workplace and to ensure the best practice of policies, programmes and strategic plans that support human capital capacity development in the workplace. Further research should be conducted to evaluate the effects of capacity development programmes in the public and private sectors. Lastly, but not least, research should be extensively conducted to explore the extent to which capacity development in the petroleum industry has contributed to socio-economic transformation in South Africa. Multiple research studies should be addressing the challenges affecting models of capacity development programmes in promoting positive human capital capacity development in the public and private sectors in South Africa. Therefore, future research should also consider recommendations addressed by respondents, which can be viewed in Appendix D, Table 6.11: Inference of Quantitative and Qualitative results.

LIST OF REFERENCES

- African Development Bank Group Report (2013). *Capacity Focus: Capacity Development: A Foundation for Transformation*. Vol. 3, No 1. Available: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Capacity_Development_-_A_Foundation_for_Transformation.pdf. Accessed, 18 December 2020.
- African Development Bank Group Report, 2013. *Capacity Focus: Capacity Focus: Capacity Development: A Foundation for Transformation*. Vol.3, No 3. Available: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Capacity_Focus__Capacity_Development_A_Foundation_for_Transformation-Vol.3No3.pdf. Accessed, 18 December 2020.
- African National Congress (ANC). 2017. *Economic transformation*. Available: http://www.anc.org.za/sites/default/files/National%20Policy%20Conference%202017%20Economic%20Transformation_1.pdf. Accessed, 26 Jul2019.
- Akintoye, A. and Beck, M. 2009. *Policy, finance, and management for public-private partnerships*. London: Wiley-Blackwell.
- Alshenqeeti, H. 2014. *Interviewing as a Data Collection Method: A Critical Review*. Available: https://www.researchgate.net/publication/269869369_Interviewing_as_a_Data_Collection_Method_A_Critical_Review. Accessed, 7 June 2020.
- Alvi, M. 2016. *A manual for selecting sampling techniques in research*. Available: https://mpira.ub.uni-muenchen.de/70218/1/MPRA_paper_70218.pdf. Accessed 30 October 2019.
- Amadei, B. 2020. *A Systems Approach to Building Community Capacity and Resilience*. Available: <https://ideas.repec.org/a/gam/jchals/v11y2020i2p28-d431590.html>. Accessed, 11 December 2020.
- Anderson, B. 2020. 5IR – *working towards a sustainable society*: CHIETA regional skills forum, February 2020.

- Anderson, D.L. 2015. *Organisation development. The process of leading organisational change*. 3rd ed. London: Sage
- Anyanwu, J.C. 2014. Factors Affecting Economic Growth in Africa: Are There any Lessons from China? *African Development Review*. Vol (26) No 3: 468–493.
- Arıkan, E.E and Unal, H. 2015. Investigation of Problem-Solving and Problem-Posing Abilities of Seventh-Grade Students. *Journal of Educational Sciences: Theory & Practice*, 15 (5): 1403 -1416
- Asmal, K. and Mdladlana, M.M.L. 2010. *Human resource development for South Africa: A nation at work for a better life for all*. Available: <http://www.dhet.gov.za/Reports%20Doc%20Library/Human%20Resource%20Development%20Strategy%20for%20South%20Africa.pdf>. Accessed 23 June 2018.
- Augood, R. 2010. *Challenges facing the African Refining sector*. Available: http://www.petroleumafrica.com/en/photos/1267626997_downstream_focus_.pdf. Accessed, 8 December 2020.
- Bagozzi, R.P and Yi, Y. 2012. Specification, evaluation, and interpretation of structural equation models. *Journal of the academy of marketing science*, 40 (1): 8-34.
- Bester, A. 2015. *Capacity development: A report prepared for the United Nations Department of Economic and Social Affairs for the 2016 Quadrennial Comprehensive Policy Review*. Available: <https://www.un.org/en/ecosoc/qcpr/pdf/sgr2016-deskreview-capdev.pdf>. Accessed, 4 September 2018.
- Bhasi, S., Linden, N.H.V., Jong, V., Falzon, J., Haelen, H.V. and Pereira, R.C. 2014. *Capacity Development for strengthening the gas sector in Mozambique*. Available: https://www.researchgate.net/publication/314368482_Capacity_Development_for_strengthening_the_gas_sector_in_Mozambique. Accessed, 17 December 2020.

- Blagescu, M. and Young, J. 2006. *Capacity Development for Policy Advocacy: Current thinking and approaches among agencies supporting Civil Society Organisations*. Available: <https://www.files.ethz.ch/isn/22812/wp260.pdf>. Accessed, 03 September 2018.
- Bloch, G., Favis, M and Hargovan, J. 2019. *Public Administration Training in Africa: Competencies in Development Management*. Available. 2nd ed. New York: Routledge.
- Bolger, J. 2000. *Capacity development: why, what, and how*. Available: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.458.7262&rep=rep1&type=pdf>. Accessed, 12 October 2019.
- Boomsma, A., Hoogland, J. J., Cudeck, R., du Toit, S., and Sörbom, D. 2001. *Structural equation models: Present and future. A Festschrift in honor of Karl Jöreskog*. Available: https://www.researchgate.net/publication/237462497_The_robustness_of_LISREL_modeling_revisited_In_R_Cudeck_S_du_Toit_D_Sorbom_Eds_Structural_equation_modeling_Present_and_future_A_Festschrift_in_honor_of_Karl_Joreskog_preliminary_version_with_referenc. Accessed, 10 December 2020.
- Burke, W.W. 2014. *Organisational Change. Theory and practice*. 4th ed. London: Sage.
- Buss, I.N. 2010. *Best practices in capacity Building approaches. Recommendations for the design of a long -term capacity building strategy for the wind and solar sectors by the MEF Working Group*. Available: http://en.openei.org/wiki/GIZ-Best_Practices_in_Capacity_Building_Approache. Accessed, 18 April 2019.
- Calitz M.G. 2009. *Introduction the pilot study*. Available: <http://uir.unisa.ac.za/bitstream/handle/10500/1648/06chapter5.pdf>. Accessed, 31 October 2018.

- Carneiro, G., Boman, K., Woel, B. and Nylund, A. 2015. *Support to Capacity Development– Identifying Good Practice in Swedish Development Cooperation: Sida evaluation Report for the Joint Scandinavian evaluation of support to capacity development*. Available: <https://www.oecd.org/derec/sweden/Support-to-capacity-development.pdf>. Accessed, 4 September 2018.
- Chen, C., Xuyu, C., X and Tian, L. 2019. *Partial Least Squares Regression Performs Well in MRI-Based Individualized Estimations*. Available: <https://www.frontiersin.org/articles/10.3389/fnins.2019.01282/full>. Accessed, 03 December 2020.
- CHIETA Regional Skills Forums 2020. *Stakeholder's forum 2020: Research, Planning, Monitoring and Evaluation* (February 2020).
- CHIETA Report. 2014. *Chamber: petroleum and base chemicals skills plan for the petroleum subsector*. Available: https://www.chieta.org.za/business-units/research-and-skills-planning/ssp/item/download/Final_Petroleum_Subsector_Skills_Plan_-_March_2014.docx. Accessed, 17 December 2020.
- Choe, W.J. 2019. *The Performance of Supply-Push Versus Demand-Pull Technology Transfer and the Role of Technology Marketing Strategies: The Case of a Korean Public Research Institute*. Available: <https://www.mdpi.com/2071-1050/11/7/2005/pdf>. Accessed, 10 July 2019.
- Corkin, L. and Bank, R.M. 2017. *After the boom: Angola's recurring oil challenges in new context*. Available: <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2017/05/After-the-Boom-Angolas-Recurring-Oil-Challenges-in-a-New-Context-WPM-72.pdf>. Accessed, 29 November 2018.
- Corniani, M. 2008. *Push and Pull Policy in Market-Driven Management*. Available: https://www.researchgate.net/publication/227600123_Push_and_Pull_Policy_in_Market-Driven_Management. Accessed, 10 July 2019.
- Creswell, J.W., Clark, V.L.P. 2018. *Designing and conducting mixed methods research*. 3rd ed. London: Sage.

- Creswell, J.W. 2015. *A concise introduction to mixed methods research*. California: Sage.
- Creswell, J.W. 2011 and Clark V.L. 2011. *Designing and conducting mixed methods research*. 3rd ed. Los Angeles: Sage.
- Creswell, J.W. 2009. *Research design: quantitative, qualitative, and mixed methods approach*. 3rd ed. Los Angeles: Sage.
- Cronbach, L.J. 1951. Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334.
- Daniel, E. 2016. The Usefulness of Qualitative and Quantitative Approaches and Methods in Researching Problem-Solving Ability in Science Education Curriculum. *Journal of Education and Practice*, 7 (15): 91 – 100.
- Dawson, P. and Andriopoulos, C. 2014. *Managing change, creativity, and innovation*. London: Sage.
- Delaigle, A and Hall, P. 2012. *Methodology and theory for partial least squares applied to functional data*. Available: <https://arxiv.org/abs/1205.6367>. Accessed, 03 December 2020.
- Department of Higher Education and Training Annual Report 2016/2017. *DHET Annual Report 2016 - South African Government*. Available: https://www.gov.za/sites/default/files/DHET%20Annual%20Report%202016%20-%20202017_a.pdf. Accessed, 17 November 2018.
- Durban University of Technology. 2016. *Research Proposal and Ethics Checklist: Ethical issues checklist for research approval: Risks to participants*. Available: https://raps.dut.ac.za/moodle/pluginfile.php/520/mod_folder/content/0/PG-2a-2018-Research-Proposal-and-Ethics-Checklist.pdf?forcedownload=1. Accessed, 13 June 2020.
- Eade, D. 1997. *Capacity building: an approach to people-Centred Development*. Island: Oxfam UK publications.

- Education, Audiovisual and Culture Executive Agency (EACEA). 2020. *Intra-Africa Academic Mobility Scheme 2020*. Available: https://eacea.ec.europa.eu/intra-africa/funding/intra-africa-academic-mobility-scheme-2020_en. Accessed, 13 June 2020.
- Erasmus, B.J., Strydom, J.W and Kloppers, S.R. 2018. *Introduction to Business Management*. 10th ed. Cape Town: Oxford University press.
- Erasmus, B.J., Strydom, J.W. and Kloppers, S.R. 2014. *Introduction to Business Management*. 9th ed. Cape Town: ABC Press.
- Fink, A. 2010. *Conducting research literature review*. 3rd ed. Los Angeles: Sage Publications.
- Folsher, E and Chonco, L. 2006. *Skills development practice made easy: education, training, and development guideline and 2000. Evaluation of ODA to capacity building resources*. Randburg: Knowers Publishing.
- Fornell, C and Larcker, D.F. 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18 (1): 39-50.
- Gefen, D., Straub, D and Boudreau, M.C. 2000. Structural equation modelling and regression: Guidelines for research practice. *Communications of the association for information systems*, 4 (7): 2 - 77.
- Gobodo, N.M. 2008. *Social transformation programme: No Community Can be Left Behind*. Available: https://www.westerncape.gov.za/other/2009/1/stp_report_april08.pdf. Accessed, 17 December 2020.
- Good News Bible, 2019. *The Good News Bible: Today's English version (Anglicised text)*. 11th ed. Bellville: Bible society of South Africa.
- Goosby, C. 2011. *Capacity Building and Strengthening Framework*. Available: <https://www.nastad.org/sites/default/files/resources/docs/PEPFAR-Capacity-Building-Strengthening-Framework.pdf>. Accessed, 10 September 2020.

- Graham, C. 2017. *Research design considerations: Workshop participation based on a presentation by Dr Carrol Graham at DUT, Ritson Campus, 2017.*
- Gumede, V. 2014. *Socio-economic transformation in post-apartheid South Africa: progress and challenges.* Available: [economic_transformation_in_post_apartheid_South_Africa_progress_and_challenges](#). Accessed: 17 December 2020.
- Gumede, V. 2017. *Radical socio-economic transformation is bigger than inclusive growth.* Available: [http://www.vusigumede.com/content/2017/JUN%202017/Mail%20&%20Guardian%20opinion%20article%20\(02-08%20June%202017\).pdf](http://www.vusigumede.com/content/2017/JUN%202017/Mail%20&%20Guardian%20opinion%20article%20(02-08%20June%202017).pdf). (Accessed 5 September 2020).
- Hammond, S., Mabena, V. and Strydom, E. 2011. *Understanding the skills development act.* Cape Town: Juta.
- Hansen, J.J. 2005. *On validity, reliability, and triangulation.* Available: <http://www.woodhillpark.com/attachments/1/Triangulation.pdf>. (Accessed 31 October 2019).
- Hanson, K.T. 2010. *African Development Bank group: Capacity and Skills Development as Prime Mechanisms for Africa's Socioeconomic Transformation.* Available: https://www.researchgate.net/publication/268390655_Capacity_and_Skills_Development_as_Prime_Mechanisms_for_Africa%27s_Socio-economic_Transformation. Accessed, 21 January 2020.
- Heale, R. (2013). *Understanding triangulation in research.* Available: <https://ebn.bmj.com/content/16/4/98>. Accessed, 05 June 2020.
- Henseler, J., Hubona, G. and Ray, P. 2016. "Using PLS Path Modeling in New Technology Research: Updated Guidelines." *Industrial Management and Data Systems*, 116 (1): 2 - 20.
- Hoskins, T. 2012. *Corporate social responsibility handbook: making csr and narrative reporting work for your business.* 3rd ed. London: ICSA Information & Training Ltd.

- HRD-SA, 2010 – 2030. *Human Resource Development Strategy for South Africa (HRD-SA) 2010 – 2030* Available: https://www.agriseta.co.za/downloads/HRDS_2030.pdf. Accessed, 16 September 2019.
- Hossain, U. and Roy, I. 2016. Human capital management: The new competitive approach. *International Journal of Economics, Commerce, and Management*, 4 (5): 1020–1034.
- International Finance Corporation (IFC). 2014. *Invest in capacity building*. Available: <https://www.ifc.org/wps/wcm/connect/1e31b10048855229aabcfa6a6515bb18/12014chapter5-.pdf?MOD=AJPERES&CACHEID=1e31b10048855229aabcfa6a6515bb18>. Accessed, 10 July 2018.
- International Labour Office, 2010. *A Skilled Workforce for Strong, Sustainable and Balanced Growth: A G20 Training Strategy*. Available: https://www.ilo.org/skills/pubs/WCMS_151966/lang--en/index.htm. Accessed, 29 April 2018.
- IPIECA 2011. *The global oil and gas industry association for environmental and social issues*. Available: <http://www.ohchr.org/Documents/Issues/TransCorporations/Submissions/Business/IPIECA.pdf>. (Accessed, 28 April 2019).
- Jeff, A.M., Wilson, W.S. and Baker, J. A. 2007. *Case study on Iraq's oil industry: Conference on the changing role of national oil companies in international energy markets*. Available: <https://www.bakerinstitute.org/media/files/event/2e8bf82e/Hou-Jaffe-Iraq.pdf>. Accessed, 10 July 2018.
- Jennex, M. E. 2019. *What is knowledge management?* Available: https://www.researchgate.net/publication/314500732_What_is_Knowledge_Management. Accessed, 01 July 2020.

- JICA Report. 2011. *Japan International Cooperation Agency (JICA): Case studies in capacity development in power sector with South-South cooperation components*. Available:
https://www.jica.go.jp/usa/english/office/others/pdf/publication_110527.pdf.
 Accessed, 15 November 2018.
- Johnson, N., Fields, Z., Chukwuma, N.A. and Ekwueme, A. 2018. *Training, organisational commitment and turnover intention among Nigerian civil servants*. *Journal of Economics and Behavioural Studies*, 10 (6A): 2220-6140. Available:
<https://ojs.amhinternational.com/index.php/jeps/article/view/2647/1775>.
 Accessed, 30 January 2019.
- Joseph, W. 2019. *Understanding Push and Pull Strategies*. Available:
<https://www.williamjoseph.com/understanding-push-pull-strategies/>.
 Accessed, 24 March 2020.
- Kim, J.I. 2013. *Capacity Building for the Cambodian National Petroleum Authority: technical assistance completion report*. Available:
<https://www.adb.org/sites/default/files/project-document/80318/42100-012-tcr.pdf>. Accessed, 03 September 2018.
- Kinash, S and Brand, J. 2010. *Pedagogy: A Quasi Experimental and Ethnographic Pilot Test of the iPad in a Blended Mobile Learning Environment*. *27th Annual Conference of the Australian Society for Computers in Learning in Tertiary Education (ASCILITE)*, Sydney, 147-151. Available:
<http://epublications.bond.edu.au/cgi/viewcontent.cgi?article=1015&context=tls>. Accessed, 30 October 2019.
- King, K and Palmer, R. 2010. *Planning for technical and vocational skills development*. Available:
unesdoc.unesco.org/images/0018/001895/189530e.pdf. Accessed, 19 April 2020.
- Kirsten, H.W. 2001. *Personnel management for N4 students: A practical approach for technical colleges in South Africa*. 2nd ed. Pretoria campus: Springfield College.

- Kock, N. 2010. Using WarpPLS in e-collaboration studies: an overview of five main analysis steps. *International Journal of e-Collaboration*, 6 (4): 1-11.
- Kodua, A.A. 2019. This thing of social media! Going business or socialisation? Solving the great dilemma. Durban University of Technology: *Emerald Insight Journal*, 22 (3): 1463 – 6689.
- Kriyantono, R and Kholifah, S. 2013. *Model for Capacity Building in Behaviour Change Communication (BCC) Program for HIV-AIDS Prevention in Malang, East Java*. Available: https://www.researchgate.net/publication/305683572_Model_for_Capacity_Building_in_Behavior_Change_Communication_BCC_Program_for_HIV-AIDS_Prevention_in_Malang_East_Java. Accessed, 11 December 2020.
- Kruger, D., Maritz, M. and Ramphal, R. 2019. *Operations Management*. Revised 3rd ed. Southern Africa: Oxford University Press.
- Kumar, R. 2011. *Research Methodology: a step-by-step guide for beginners*. 3rd ed. Los Angeles: Sage.
- Kwame, O.A. 2017. *The human factor model and the radical transformation of the South African economy*. Conference presentation at Durban University of Technology (DUT): 11 August 2017.
- Lazenby, J.A.A., Achandinha, N., Benedict, E., Boshoff, S. and Ilotman, A.P. 2016. *General management*. Available: <https://www.worldcat.org/title/general-management/oclc/1001522559>. Accessed, 18 September 2019.
- Leedy, P.D., Ormrod, J.E. 2010. *Practical research: Planning and design*. 9th ed. New Jersey: Pearson.
- Leimbach, M.P. and Emde, E. 2011. *The 80/20 rule for learning transfer. Chief Learning Officer*. Available: <https://www.chieflearningofficer.com/2011/12/12/the-8020-rule-for-learning-transfer/>. Accessed, 13 March 2020.

- Leimbach, M. 2010. Learning transfer model: A research driven approach to enhancing learning effectiveness. *Industrial and commercial training*, 42 (2): 81-86.
- Liebenberg, S. 2010. *Socio-economic rights: adjudication under a transformative constitution*. Cape Town: Juta.
- Lomax, R.G and Schumacker, R.E. 2004. *A beginner's guide to structural equation modelling*. 2nd ed. London: Psychology Press.
- Lusthaus, C., Adrien, M.H. and Perstinger, M. 1999. *Capacity development: definitions, issues, and implications for planning, monitoring and evaluation*. Available:
<http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.522.1903>.
 Accessed, 3 May 2020.
- Manuel, T.A. 2011. *National Planning Commission: National Development Plan*. Available:
<http://www.education.gov.za/Portals/0/Documents/Publications/National%20Planning%20Commission%20Diagnostics%20Overview%20of%20the%20country.pdf?ver=2015-03-19-134928-000>. (Accessed 7 August 2017).
- Meyer, M., Botha, E. 2004, *Organisation development and transformation in South Africa*. 2nd ed. Durban: LexisNexis Butterworths.
- Michika, D.M. 2014. *Capacity building programmes for the skills development of employees at the Gauteng department of education*. Available:
https://dspace.nwu.ac.za/bitstream/handle/10394/13189/Machika_DM.pdf?sequence=1. Accessed 29 May 2018.
- Mohapi, L.M. 2011. *Skills development strategy for efficient service delivery at Sedibeng District Municipality*. Mini dissertation. Vanderbijlpark: Vaal Triangle Campus: North West University.

- Mohsen, T and Reg, D. 2011. Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2: 53-55. Available: <https://www.ijme.net/archive/2/cronbachs-alpha.pdf>. (Accessed 8 June 2018).
- Mosala, S.J., Venter, J.C.M. and Bain, E.G. 2017. South Africa's Economic Transformation since 1994: What Influence has the National Democratic Revolution (NDR) Had? Sage Journals: *The Review of Black Political Economy*, (44): 327–340.
- Mpango, P. 2013. *Socio-economic transformation for poverty reduction: eight Key messages for unlocking Tanzania's Potential*. Available: http://www.repoa.or.tz/documents/REPOA_BRIEF_37.pdf. Accessed, 20 November 2018.
- Mukanova, D.K., Tleuberdinova and Aizhan, T. 2013. *The concept and content of socio-economic development of the region*. Available: <http://search.proquest.com.dutlib.dut.ac.za/docview/1470791853?pq-origsite=summon>. Accessed, 17 June 2020.
- Mutinta, G. 2013. *An Introduction to Qualitative Research: Non-Probability Sampling Methods*. Postgraduate Research Seminar: School of Management, Information Technology & Governance (SMITG), UKZN.
- Myers, G. 2017. *Research methodology: The beginners' manual*. Available: <https://www.goodreads.com/book/show/34088936-research-methodology>. Accessed, 3 July 2020.
- Ndalamba, K.K. 2019. An exploration into the problematic public policies and the leadership challenge for socio-economic transformation in South Africa. *International Journal of Excellence in Government*, 1 (1): 37-47
- Nelij, S. 2010. *Sage research methods-Triangulation*. Available: <https://methods.sagepub.com/reference/encyc-of-research-design/n469.xml>. Accessed, 05 June 2020.
- Noble, H. and Heale, R. 2019. *Triangulation in research, with example*. Available: <https://ebn.bmj.com/content/22/3/67>. Accessed, 05 June 2020.

- Noya, A and Clarence, E. 2009. *OECD: Community capacity building: fostering economic and social resilience*. Available: <https://www.oecd.org/cfe/leed/44681969.pdf>. Accessed, 18 December 2020.
- Oberholzer, L. 2020. *Oil and gas regulation in South Africa: overview*. Available: <https://uk.practicallaw.thomsonreuters.com/w-010-7341?transitionType=Default&contextData=%28sc.Default%29>. Accessed, 17 December 2020.
- O'Connor, B., Bronner, M and Delaney, C. 2007. *Learning at work: how to support individual and organisational learning*. Massachusetts: HRD Press.
- OECD. 2015. *The G20 strategy for developing and using skills for the 21st century: Organisation for economic co-operation and development*. Available: <http://www.g20.utoronto.ca/2015/The-G20-Skills-Strategy-Policies-for-Developing-and-Using-Skills-for-21st-Century.pdf>. Accessed, 29 April 2018.
- OECD. 2013. *Skills development and training in SMEs, local economic and employment development*. Available: <https://www.oecd.org/publications/skills-development-and-training-in-smes-9789264169425-en.htm>. Accessed, 22 June 2020.
- OECD. 2011. *Employment, skills, and entrepreneurship strategies in the Mediterranean: pathways for the future*. Available: <https://www.oecd.org/cfe/leed/49367156.pdf>. Accessed, 20 November 2018.
- OECD Report. 2006. *Guidelines for Multinational Enterprises: 2006 Annual Meeting of the National Contact Points*. Available: <https://www.oecd.org/daf/inv/mne/37439881.pdf>. Accessed, 01 December 2019.
- O'Leary, Z. 2004. *The essential guide to doing research*. Available: http://eunacal.org/metodakerkimi/wp-content/uploads/spss/The_essential_guide_to_doing_research.pdf. Accessed, 30 October 2020.

- Olsen, W. 2004. *Triangulation in social research: qualitative and quantitative methods can really be mixed*. Available: <https://pdfs.semanticscholar.org/2b7e/35a71ef942d5d1b520502a20f57b20b7f2bd.pdf>. Accessed, 31 October 2019.
- Oribhabor, C.B. 2020. Research Sampling and Sample Size Determination: A practical Application. *Federal University Dutsin-Ma Journal of educational Research (Fudjer)*, 2 (1): 47 – 56.
- Ovadia, J.S. 2016. *Strengthening development linkages from the mineral resource sector in ECCAS countries: Challenges and Opportunities in Implementing Local Content in a Regional Context*. Available: https://unctad.org/meetings/en/Presentation/Congo_28092016_R2_Jesse_Ovadia.pdf. Accessed 29 November 2018. Accessed, 15 August 2020.
- Ozigbo, N.C. 2008. *Technological capacity Building in the Nigeria's oil and gas industry*. Available: <http://iima.org/wp/wp-content/uploads/2017/04/10-piima-2008-ozigbo-51-64.pdf>. Accessed, 13 December 2018.
- Peek, P., Fenard, J., Gantes, P. and Theiler, C. 2008. *Skills shortages in the global oil and gas industry: How to close the gap part I*. Available: <https://higherlogicdownload.s3.amazonaws.com/SPE/a6c2d780-4741-4804-b4e0-010e4812ddc0/UploadedImages/2009/SKILLS%20SHORTAGE%20PART%20I%20pdf1%5B1%5D.pdf>. Accessed, 18 September 2018.
- Pirouz, D. 2006. *An Overview of Partial Least Squares*. Available: https://www.researchgate.net/publication/228296847_An_Overview_of_Partial_Least_Squares. Accessed, 03 December 2020.
- Pietersen, J and Maree, K. 2007. *Statistical analysis: descriptive statistics*. Pretoria: Van Schaik Publishers.
- PSETA Report. 2016. *Sector skills plan: Signing-off of the Sector Skills Plan 2011-2016*. Available: <http://www.pseta.org.za/wp-content/uploads/documents/PSETA%20Sector%20Skills%20Plan.docx>. Accessed, 17 December 2020.

- Punch, K.F and Oancea, A. 2014. *Introduction to research methods in education*. Available: <https://books.google.co.za/books?isbn=1473909201>. Accessed, 18 May 2019.
- Puttewar, A.S., Askhedkar, R.D. and Handa, C.C. 2016. Critical Analysis of Job satisfaction in Service industry: A Review. *International Journal of Engineering Research and General Science*, 4 (2): 2091-2730.
- PWC Report. 2016. *The choice to change Africa oil & gas review: Report on current developments in the oil & gas industry in Africa*. Available: <https://www.pwc.co.za/en/assets/pdf/oil-and-gas-review-2016.pdf>. Accessed, 13 March 2019.
- Rajasekar, S., Philominathan, P. and Chinnathambi, V. 2013. *Research methodology*. Available: http://www.research-system.siam.edu/images/independent/Role_of_Entrepreneurship_in_Future_Economic_Development_of_Taiwan/Chapter_3.pdf. (Accessed 30 October 2019).
- Rensburg, J.V. and Pellissier, J.S. 2017. *Economic and management research*. Cape Town: Oxford University press.
- Republic of South Africa. 2012. *National Qualification Framework*. Pretoria: Government Printer.
- Revenio, C. and Jalagat, J. 2016. The Impact of Change and Change Management in Achieving Corporate Goals and Objectives: Organizational Perspective. *International Journal of Science and Research (IJSR)*, 5 (11): 1233 - 1239
- Reza, C.D. 2007. *Skills Shortages in South Africa: A Literature Review*. Available: https://open.uct.ac.za/bitstream/item/7377/DPRU_WP07-121.pdf?sequence=1. Accessed, 15 September 2019.
- Ridley, D. 2012. *The literature review: a step-by-step guide for students*. 2nd ed. London: Sage.

- Robertson, T. 2019. *Difference between Push & Pull Marketing*. Available: <https://smallbusiness.chron.com/difference-between-push-pull-marketing-31806.html>. Accessed, 17 April 2019.
- Rodrik, D and OECD (2007). *Growth: building jobs and prosperity in developing countries*. Available: <http://www.oecd.org/derec/unitedkingdom/40700982.pdf>. Accessed, 26 July 2019.
- Rothman, S., Kelly, D., Raban, B., Tobin, M., Cook, J., O'Malley, K., Ozolins, C. and Bramich, M. 2012. *Evaluation of the assessment and rating processes under the National Quality Standard for Early Childhood Education and Care and School Age Care*. Available: www.educationcouncil.edu.au/site/.../ACER%20evaluation%20report-2012.pdf. Accessed, 4 September 2018.
- Sablonnière, R. 2017. *Toward a Psychology of Social Change: A Typology of Social Change*. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5368273/>. Accessed, 17 December 2020.
- Salomon, R., Inga, Hilsen, A and Whist, E. 2007. *Capacity building for employers' organisation on productivity and competitiveness. Report to international labour organisation following the independent final evaluation*. Available: www.hioa.no/content/download/53356/809679/file/Revised%20final.pdf. Accessed, 02 November 2018.
- SAPIA Report. 2016. *Petroleum and Liquid Fuels Industry Contribution to the Economy*. Available: indaba/presentations/Liquid-fuels-presentation.pdf. Accessed, 17 December 2020.
- SAPIA Annual Report. 2015. *South African Petroleum Industry Association Report*. Available: http://www.sapia.org.za/Portals/default/AnnualReport2015/SAPIA_AR_2015_FA-spread.pdf. Accessed, 25 April 2019.

- SAPIA Annual Report. 2012. *South African Petroleum Industry Association Report*. Available: <https://www.sapia.org.za/Publications>. Accessed, November 2019.
- Sasol Report. 2014. *A New Era for Sasol: sustainable development Report*. Available: https://www.sasol.com/sites/default/files/financial_reports/Sustainable%20development%20report%20-%202014.pdf. Accessed, 23 February 2020.
- Sekaran, U. and Bougie, R. 2013. *Research methods for business*. 6th ed. Chichester: John Wiley & Sons Ltd.
- Sekaran, U. and Bougie, R. 2009. *Research Methods for Business: A Skill-Building Approach*. 5th ed. Hoboken: John Wiley and Sons Inc.
- Sekaran, U. 2006. *Research methods for business: a skill building approach*. Chichester: John Wiley & Sons Ltd.
- Seleoane, M. 2001. *Socio-economic rights in the South African constitution: Theory and practice*. Pretoria: Human Science Research Council (HSRC) Press
- Sharma, R.C. and Sharma, N. 2018. *Human resource management: Theory and practice*. California: Sage.
- Sharp, J.L., Mobley, C., Hammond, C., Withington, C., Drew, S., Stringfield, S., and Stipanovic, N. 2011. A Mixed Methods Sampling Methodology for a Multisite Case Study. *Journal of Mixed Methods Research*, 6 (1): 34 – 54.
- Simpson, J and Cherouvis, T. 2015. *Anonymity, Confidentiality, and Privacy in Human Subjects Research*. Available: https://www.unh.edu/research/sites/www.unh.edu.research/files/docs/RIS/anonymity_confidentialityprivacy.pdf. (Accessed 31 October 2019).
- Smit, P.J., Botha, T. and Vrba, M.J. 2016. *Management principles: A contemporary edition for Africa*. 6th ed. Cape Town: Juta.
- Smit, P.J. 2011. *Management principles*. Cape Town: Junta and company.

- South African Department of Energy Report. 2020. *Department of Energy Annual Report 2019/2020*. Available: <https://www.gov.za/documents/department-energy-annual-report-20192020-13-dec-2020-0000>. Accessed, 02 January 2021.
- South African Department of Energy Report. 2017. *Petroleum industry overview*. Available: http://www.energy.gov.za/files/petroleum_frame.html. Accessed, 09 June 2020.
- South African Department of Energy Report. 2014. *Oil and Gas: Department of Energy vision, mission, and values*. Available: www.energy.gov.za/files/media/Pub/Oil_and_Gas_brochure.pdf. Accessed, 17 June 2020.
- South African Department of Labour. 2010. *National skills development strategy: April 2005 – March 2010*. Available: http://www.teta.org.za/documents/Documents/2008Oct30_22/UsefulDocNationalSkillsDevStrategy20052010.pdf. Accessed, 20 June 2018.
- South African Government Report. 2009. *Human Resource Development Strategy for South Africa (HRD-SA): 2010 – 2030*. Available: https://www.gov.za/sites/default/files/gcis_document/201409/doehrds-sa22022010.pdf. Accessed, 3 November 2019.
- Suki, N.M. 2011. A structural model of customer satisfaction and trust in vendors involved in mobile commerce. *International Journal of Business Science and Applied Management*, 6(2), 18-29.
- Tashakkori, A., Teddlie, C. 2010. *Mixed methods in social and behavioural research*. 2nd ed. London: Sage.
- Thomas, G.C. and Worley, C.G. 2015. *Organisational development and change*. 10th ed. USA, Stamford: Cengage Learning.
- Turner, D.W. 2010. *Qualitative interview design*. Available: <http://www.nova.edu/ssw/QR15-3/qid.pdf>. Review vol.2. Accessed, 17 August 2019.

- Ugandan Ministry of Energy and Mineral development Report. 2011. *Enhancing national participation in the oil and gas industry in Uganda*. Available: <http://www.eisourcebook.org/cms/Feb%202014/Uganda,%20Enhancing%20National%20Petroleum%20Participation.pdf>. Accessed, 23 August 2018.
- Uddin, M.D.K., Akther, S. and Tumpa, A.S. 2016. Factors influencing job satisfaction of employees: A study on telecommunication sector of Bangladesh. *European journal of business and management*, 8 (11): 2222-2839.
- UNDP Report. 2011. *Practitioner's Guide: Capacity Development for Environmental Sustainability*. Available: https://sustainabledevelopment.un.org/content/documents/954017_UNDP_Practitioner_Guide_CD%20for%20Sustainability.pdf. Accessed, 18 December 2020.
- UNDP Report. 2010. *Capacity development*. Available: <https://www.endvawnow.org/en/articles/321-capacity-development-.html>. Accessed, 18 December 2020.
- UNDP Report. 2009. *Capacity development: A UNDP Primer*. Available: <http://www.undp.org/content/dam/aplaws/publication/en/publications/capacity-development/capacity-development-a-undp-primer>. Accessed, 17 December 2020.
- UNDP Report. 2008. *Capacity Development: Empowering People and Institutions*. Available: <https://www.undp.org/content/dam/undp/library/corporate/UNDP-in-action/2008/English/UNDP-in-action-2008-en.pdf>. Accessed, 15 December 2020.
- UNEP. 2017. *Regional oil and gas capacity building programme for the Nairobi convention*. Available: <https://wedocs.unep.org/handle/20.500.11822/25669>. Accessed, 19 June 2020.
- UNIFEM and the African Academy of Science. 1994. *Building technical capacity and gender advocacy of young professional African women*. Nairobi: Regal Press.

- United Nations (UN). 2015. *Science, technology, and innovation for sustainable development in the global partnership for development beyond 2015: A post-2015 agenda for development: Ensuring equitable and inclusive globalisation*. Available: www.un.org/en/development/desa/policy/untaskteam.../28_thinkpiece_science.pdf. Accessed, 23 August 2018.
- United Way Calgary and Area Report. 2011. *Capacity building for organizational effectiveness: literature review: The Journey of High Performance*. Available: [http://www.calgaryunitedway.org/images/uwca/our-work/supporting-non-profits/capacity building/capacity%20building%20for%20organizational%](http://www.calgaryunitedway.org/images/uwca/our-work/supporting-non-profits/capacity%20building/capacity%20building%20for%20organizational%20). Accessed, 5 May 2018.
- Vallejo, B. and When, U. 2016. Capacity Development Evaluation: The Challenge of the Results Agenda and Measuring Return on Investment in the Global South. *Elsevier Journal*. Vol 79: 1-13.
- Vanderwalt, J., Van Noordwayk, A. and Vermenbert, W. 2016. *General management*. Pretoria: Van Shaik.
- Vaus, D. 2014. *Surveys in social research*. 6th ed. London and New York: Routledge, Taylor, and Francis Group.
- Viljoen, J. 2017. *The petroleum industry's contribution to South Africa*. Available: <http://www.energy.gov.za/files/petroleum-sector-transformation-workshop/The-petroleum-industrys-contribution-to-SA-SAPIA.pdf>. Accessed, 14 July 2020.
- Vinesh, 2014. *Role of training & development in an organisational development*. International Journal of Management and International Business Studies, 4 (2): 213-220. Available: https://www.ripublication.com/ijmibs-spl/ijmibsv4n2spl_13.pdf. Accessed, 22 July 2019
- Weimer, D.L and Vining, A.R. 2017. *Policy analysis: concepts and practice*. 6th ed. New York: Routledge.

- Williams, C. 2016. *MGMT: Principles of management student*. 8th ed. South-Western: Cengage Learning.
- Wilson, V. 2014. *Evidence Based Library and Information Practice: Research Methods: Triangulation*. Available: <https://journals.library.ualberta.ca/ebliip/index.php/EBLIP/article/view/21469>. Accessed, 26 November 2020.
- Willson, M.A. 2001. *Understanding organisational culture and the implications for corporate marketing*. Available: https://www.researchgate.net/publication/241962133_Understanding_organisational_culture_and_the_implications_for_corporate_marketing. Accessed,
- Yamoah, E.E. 2014. The Link between Human Resource Capacity Building and Job Performance. *International Journal of Human Resource Studies*, Vol. 4 (3): 139-146.
- Zarenda, H. 2013. *South Africa's National Development Plan and Its implications for regional development*. Available: <http://paulroos.co.za/wp-content/blogs.dir/12/files/2013/07/D13WP012013-Zarenda-South-Africas-NDP-and-implications-for-regional-development-20130612-fin.pdf>. Accessed, 7 August 2018.
- Zino, E.U. 2014. *Knowledge Management Concept*. Available: https://www.researchgate.net/publication/264129318_Knowledge_Management_Concept. Accessed, 01 July 2020.
- Zvitambo, K. 2017. *Exploring humanistic management philosophy in governance: A case study of Port Shepstone minibus taxi industry in KwaZulu-Natal*. A dissertation submitted in fulfilment for the requirements of the degree of Doctor of Philosophy, Management Sciences (business Administration). Durban: DUT

APPENDICES

Appendix A: Editor's Certificate letter

EDITING LETTER

696 Clare Road

Clare Estate

Durban

4091

21 February 2021

To: Whom it may concern

Editing of Doctoral Thesis: EUSTACHE TANZALA KIKASU

**EXPLORING CAPACITY DEVELOPMENT PROGRAMMES FOR SOCIO-
ECONOMIC TRANSFORMATION IN SOUTH AFRICA: A CASE STUDY OF THE
SOUTH AFRICAN PETROLEUM INDUSTRY**

This letter serves as confirmation that the aforementioned thesis has been language edited.

Any queries may be directed to the author of this letter.

Regards

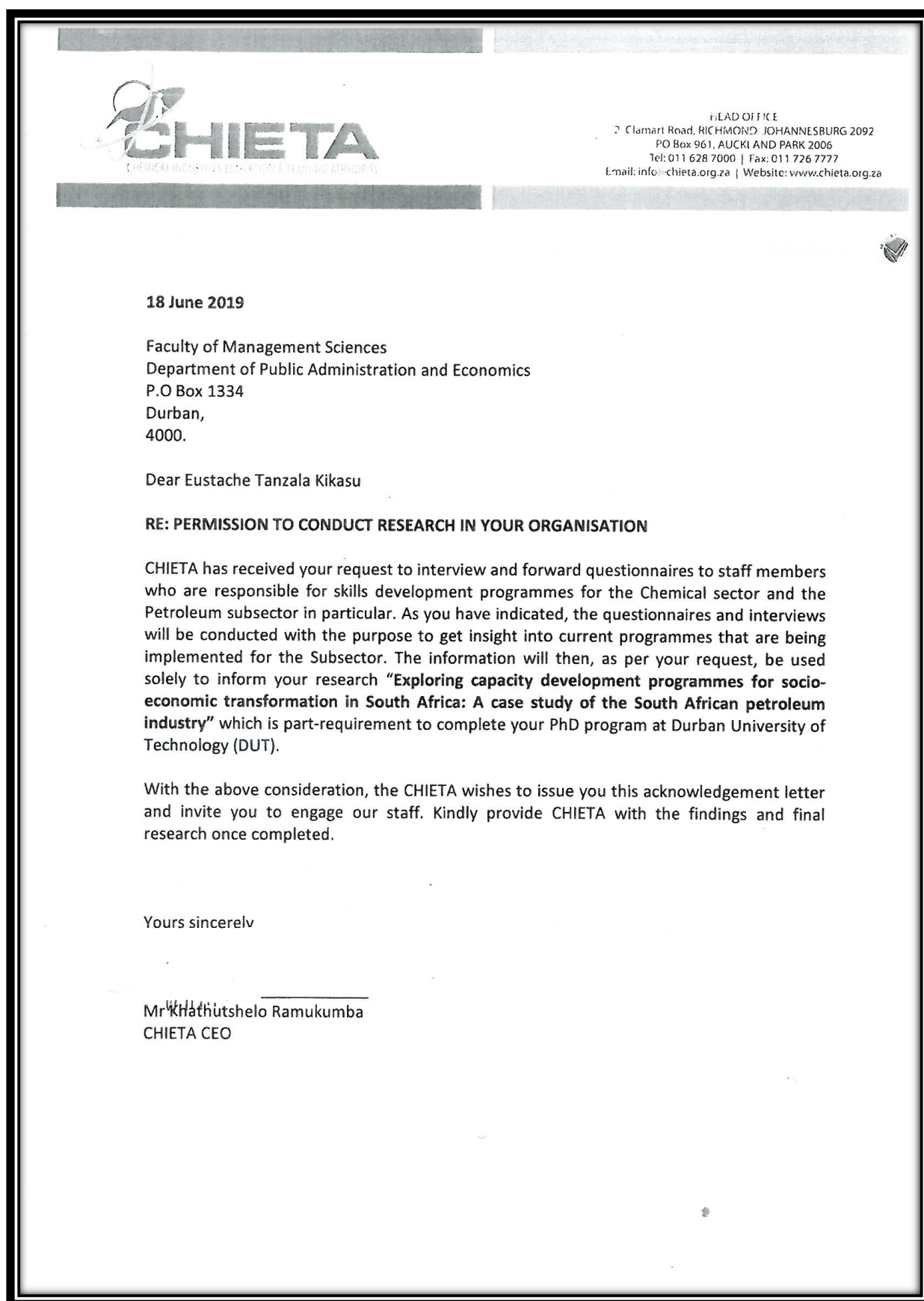


MP MATHEWS

Lecturer and Language Editor: DUT

mercillenem@dut.ac.za

Appendix B: Gatekeeper letters



Samson Ramogayana <Samson.Ramogayana@energy.gov.za>
To:eustache.tanzala@yahoo.com
Cc:Mohudi Machete,Eva Masipa,nrimala@dut.ac.za

06 Aug 2018 at 15:21

Dear Mr Eustache Tanzala Kikasu

I hope this email find you well.

This email serves to inform you that your request to conduct research in “**Exploring capacity development programmes for socio-economic transformation in South Africa: A case study of the South African petroleum industry**” at the Department of Energy has been approved. Please note that information shared during research may be a security risk, the researcher will also have to go through security processes of the Department.

The Department should be provided with the copy of the research report and that this research application is only approved for academic purpose and not to be published without the consent of the Department of Energy.

If you have any concerns or require additional information, kindly contact Ms Eva Masipa/ Samson Ramogayana on 012 4067405/7406 or eva.masipa@energy.gov.za/samson.ramogayana@energy.gov.za.

Kind regards,

Samson Ramogayana

Snr Training Officer: Skills Development

**Directorate: Human Resource Management &
Development**

Private Bag X96, Pretoria, 0001

192 Visagie Street, Pretoria, 0001

(012) 406 7406

samson.ramogayana@energy.gov.za

Do not be in such a hurry to condemn a person because he/she does not do what you do or think as you think. There was a time when you did not know what you know today.

20 February 2018

Mr Eustache Tanzala Kikasu
Faculty of Management Sciences
Department of Public Management & Economics
Durban University of Technology
P.O. Box 1334
Durban
4000

Dear Mr Kikasu

**Re: Permission to conduct research at the South African Petroleum Industry Association
NPC**

This letter serves to inform you that the South African Petroleum Industry Association NPC, hereby grant you the authorization to carry out your research work titled “ **Exploring capacity development programs for socio-economic transformation in South Africa: A case study of the South African Petroleum Industry**”.

I would however like to inform you that the permission is granted on the condition that you also make the results of your research available to SAPIA NPC.

Yours sincerely

Avhapfani Tshifularo
Executive Director

Board of Governors:

P. Mabelane (Chairperson), F. Royer, H. Mtolo, K. Zono, M. Radebe, P-Y Sachet, S. Rabbipal & Y. Hassan



465 Tara Rd
Wentworth
Bluff
4052
19 February 2019

Dear Mr Tanzala Kikasu

I hope this email find you well.

This email serves to inform you that your request to conduct research in **"Exploring capacity development programmes for socio-economic transformation in South Africa: A case study of the South African petroleum industry"** at the Engen Refinery has been approved. Please note that information shared during research may be a security risk, the researcher will also have to go through security processes of the Engen Refinery.

The Engen Refinery should be provided with the copy of the research report and that this research application is only approved for academic purpose and not to be published without the consent of the Engen Refinery.

If you have any concerns or require additional information, kindly contact Mr Sifiso Thusi on Tel no (031)4603373 or email sifiso.thusi@engenoil.com

Kind regards,

Sifiso Thusi

Operations Training Specialist: Skills Development
Directorate: Human Resource Management & Development

Appendix C: Faculty Research Ethics Clearance



MANAGEMENT SCIENCES: FACULTY RESEARCH ETHICS COMMITTEE (FREC)

15 July 2019

Student Name: Mr. T Kikasu
Student No: 21450823
FREC REF: 12/18FREC

Dear Mr Kikasu

PhD IN MANAGEMENT SCIENCES (PUBLIC MANAGEMENT)

TITLE: EXPLORING THE CAPACITY OF DEVELOPMENT PROGRAMMES FOR SOCIO-ECONOMIC TRANSFORMATION IN SOUTH AFRICA: A CASE STUDY OF THE SOUTH AFRICAN PETROLEUM INDUSTRY

Please be advised that the FREC Committee has reviewed your proposal and the following decision was made: **Approved – Ethics Level 2**

Date of FRC Approval: 24 April 2018

Approval has been granted for a period of two years from the above FRC date, after which you are required to apply for safety monitoring and annual recertification. Please use the form located at the Faculty. This form must be submitted to the FREC at least 3 months before the ethics approval for the study expires.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the FREC according to the FREC SOP's.

Please note that ANY amendments in the approved proposal require the approval of the FREC as outlined in the FREC SOP's.

Yours sincerely

Prof JP Govender
Chairperson: Faculty Research Ethics Committee

Appendix D: Table 6.11 Inference of Quantitative and Qualitative results

Section B: Objective1: Examining the factors that contribute to socio-economic transformation in South Africa

Factors/variables	Themes: Quantitative results (QNR)	Sub-themes: Qualitative results (QLR)
1. Government policies improvement and best practice	- Policies improvement is vital key factor for socio-economic transformation - Government awareness to capacity development programmes is an imperative for socio-economic transformation. - Policies best practice is a forefront key factor for petroleum industry development	- Government legislation/policies improvement and best practice are key factors to promote petroleum industry development and socio-economic transformation process in South Africa (QLR1). - Government campaign and interventions in promoting awareness about capacity development programmes could possibly be a forefront key for human capital capacity development (QLR2). - Petroleum industry is regulated; therefore, capacity development should extent to the department of energy and the legislators (QLR5). - Change in legislation is a motivation for employees skills development (QLR6).
2. Private sector contribution to socio-economic transformation	- Capacity development programmes usage in the private sector could fuel socio-economic transformation. - Human capital capacity/skills development in the private sector could play a foremost role for socio-economic transformation. - Awareness aligned to capacity development programmes usage in the private sector can be an essential ingredient to human capital capacity development and socio-economic transformation.	- Yes, capacity development can promote the private sector competitiveness, including human capital capacity development in the petroleum industry (QLR2). - The development from inside and outside must continually improve the capability of people to sustain socio-economic development. People and services providers of capacity development are keys factors to socio-economic transformation in the country (QLR4). - Internal programmes of capacity development programmes within an organisation should be continually revised and improved for the sustainability of human capital capacity development (QLR5) - Technological factor should be looked as part of socio-economic factors (QLR7).
3. Economic growth and development as key factor to socio-economic Transformation	- Economic growth is a key factor for socio-economic transformation. - Human capital capacity development could be a strategic factor for petroleum industry development and economic growth. - Capacity development can play a fundamental role in promoting employment, reducing inequality and poverty rate in the country. - Capacity development can contribute to improve and increase the performance and higher productivity in the petroleum industry.	- Capacity development programmes can improve professionalism and promote innovation, development, and modernisation in the way of doing things in the petroleum industry (QLR1). - Capacity development can contribute to petroleum industry development with need for socio-economic development (QLR2). - Education in general is a key factor in addressing socio-economic transformation and capacity development is important in addressing

	- Capacity development can promote petroleum industry's competitiveness.	issues in the community in terms of improving people education and increasing the skills/abilities or capabilities of employees in the workplace (QLR3). - In the case of Engen Refinery, employees should be periodically trained on how to improve the manufacturing of products that contribute to socio-economic transformation. For example, the production of quality asphalt by qualified/skilled people is a vital contribution to socio-economic transformation process in the country (QLR5). - Skills development makes people more aware of efficient use of petroleum products (QLR6).
4. Social change/Transformation	- Capacity/skills development is a key factor for community's lifestyle improvement. - Capacity development programmes best practice in the petroleum industry can facilitate interaction and reduce conflict between employees in the workplace and create opportunity for social cohesion. - Capacity development best practice in the petroleum industry can reduce inequalities amongst employees.	- Capacity development deals with issues of society in terms of education (QLR6). - Capacity development programmes may facilitate employees to be able to identify opportunities in the workplace and promote society development (QLR7). - Capacity development best practice could facilitate and promote opportunities for better job, people income and lifestyle improvement (QLR8). - More employments mean less crime (QLR9).
5. Capacity development programmes model best practice or usage for petroleum industry development and socio-economic transformation	- Improved model of capacity development can be a key strategy in supporting the performance and competitiveness of the petroleum industry. - Capacity development can promote socio-economic transformation by addressing the issue of skills development within sectors such as trade, health, education, industries, politics, housing, agriculture, transportation, communal services, and tourism and recreational improvements. - Capacity development programmes can promote change and growth, if well managed by both public and private organisations.	- People capacity or ability development may improve the efficiency and effectiveness of any organisation, which depend on/develop the skills of workers (QLR3). - Designed learning material, facilitating learning programmes and access to modern skills training programmes can make capacity development programmes successful in the workplace (QLR5). - If as a country, we can research to seek guidance from international petroleum industry on what methodology they use to manage and transform things within the sector (QLR6). - Capacity development can support new entrants in the sector and cause elimination of RED TAP (QLR8). - When capacity development is successful, it strengthens the ability to fulfil positive impacts in people life and consequently for organisational development (QLR9).

Section C: Objective 2: Identifying the nature of capacity development programmes in the South African petroleum industry

Factors	Themes: quantitative results (QNR)	Sub-themes: qualitative results (QLR)
1. The nature of capacity development in the public environment (Government)	- Capacity development could promote leadership, management, technical and adaptive capacities development in the public or private sectors. - Capacity development in the petroleum industry can create direct, indirect, and induced jobs and increase government revenue. - Change in the public/private sector without human capital capacity development is impossible.	- Actions need to be put in place between government and private organisations for them to participate in the process of capacity development programmes and socio-economic transformation in the country (QLR4).
2. The nature of capacity development in the private sector	- Effective capacity development can benefit both petroleum industry and stakeholders by strengthening trust, building commitment and good relationships in the workplace. - Human capital capacity development could be the engine and locomotive of petroleum industry performance and development in South Africa. - Capacity development can promote the ability to produce change by empowering individuals, leaders, organisations, and societies with quality skills training programmes.	- South Africa must emphasis on Skills development and refresh courses in order to ensure that the industry have skilled and reliable employees (QLR8). - Technology advancement is in the centre of many socio-economic activities in this era. However, technology cannot produce change or transformation without training people on how to manipulate technologies. Therefore, in all socio-economic sectors, including the petroleum industry, dimension of human capital capacity remains a key for organisational development (QLR3). - Change is possible if it can start with human capital. Change becomes unrealistic when people are not able to translate their skills, capacities or aptitude into actions that bring change. Skills training programmes is synonym of change, but of improving individual or collective capacities or responsiveness. Awareness for the best practice of the skills that people have can produce expected change (QLR5).
3. The nature of capacity development in the economic environment	- Capacity development can promote greater transparency, accountability, and more economic use of capital in the petroleum industry. - Capacity development best practice can cause major opportunities for effective skills use, increase economic activities, and reduce the risks of negative effects for petroleum industry development. - The use of capacity development programmes could promote and increase local refining capacity and productivity. - Instability resulting from increased global competition and technological innovation requires the South African petroleum industry to be aligned with capacity development interventions for performance, innovation, and competitiveness improvement. - Capacity development can empower the workforce with required skills that can support and promote the culture of creativity, innovation, and competitiveness in the petroleum industry.	- SAUDI refineries are boosting refinery skilled personnel in numbers. It does not matter how many people are trained. Local companies cannot compete to those countries due to many reasons. For example, policies for skills development and employees' retention are not properly applied in the oil sector (QLR8). - New and advanced technologies are factors of that can contribute to refining capacity development. Therefore, capacity development improves the ability of workers for effectiveness and efficiency for increased productivity (QLR9). - Capacity development is creative and innovative. New skills or new knowledge offer competitive advantages to any organisation that is flexible and ready to empower constantly its staff members (QLR4).

	- Human capital capacity development could make the petroleum industry to become economically profitable and technologically sustainable.	- Morale or behavioural capacities, as well as functional and technical skills can generate positive actions that can be profitable to the oil sector. But efforts are required for the skills development and retention of workers (QLR7).
4. The nature of capacity development in the social environment	- Skills shortages issue in the petroleum industry can be resolved through employees' quality skills training programmes in specific field. - Capacity development programmes could have important link-effects between petroleum industry development and socio-economic transformation in South Africa. - Specific skills training programmes are required to empower managers and workers with the kind of technical skills, necessary for decision making to advance the petroleum industry performance and development.	- Regional Centre for skills development in association with public and private organisations should stand together and develop a provincial or national Centre of skills development that focus on scarce skills development. In relation with the issue of skills shortages, Regional Centre focussing on skills development should invest multi-dimensional efforts in the process of technical skills development and build new Micro-Centre of scarce skills development (QLR3). - DUT as a provider of capacity development should reach the petroleum industry (Chemistry advisory board), to people from SAPREF, ENGEN and other petroleum organisations to organise skills training programmes, as well as petroleum organisations should frequently interact in partnership with DUT and other academic institutions on how students should be prepared to embrace new responsibilities in the industry (QLR3). - Most expert people are travelling to South Arabia and other world region for job, because they have created incentive to keep and attract experienced and qualify people in most Asian countries (QLR5).
5. The nature of capacity development in the petroleum industry	- Capacity development programmes must strategically focus on social transformation through human capacity/skills development. - Leadership, managers, and workers need to be constantly empowered with conceptual, interpersonal, and technical skills programmes that enable them to remain effective and efficient in a working or technically demanding industry. - Capacity development programmes could contribute on promoting skilled employees' retention in the petroleum industry.	- Managers and supervisors must create awareness and react in response to training programmes (QLR5). - South Africa must emphasis on skills development and refresh courses in order to ensure that the industry have skilled and reliable employees (QLR6). - Capacity development can contribute on improving the adoption of strategies, mentoring and on-job training programmes to be offered by countries that excel in the petroleum industry (QLR8).

Section D: Objective 3: Investigating on how capacity development programmes can contribute to socio-economic transformation in South Africa

Factors	Themes: quantitative results (QNR)	Sub-themes: qualitative results (QLR)
1. Capacity development programmes contribution to public environment for socio-economic transformation.	- Human capital, scientific, technological, organisational, institutional and resource capabilities are the ingredients of capacity development that drive to achieve change and transformation in the country. - Effective or successful capacity development programmes (skills training programmes) in the petroleum industry can bring together government and private sector to continually promote human capacity development. - Capacity development programmes usage could generate positive impacts in all areas of public and private sectors (including economic, social, cultural, and educational and other spheres of life).	- SAPIA has put in place two programmes to assist employees' capacity development, specifically, programmes for women capacity development in the petroleum industry. Members use to send delegates to the programmes for capacity development (QLR4). -Institutions (CHIETA) that connect organisations in partnership to government need to be strengthen in terms of improving collaboration for effective human capital capacity development (QLR5). - Positive impacts are linked to many factors, including awareness to the best practice existing policies as well as to the improvement these policies (QLR2).
2. Capacity development programmes contribution to private environment for socio-economic transformation	- Capacity development programmes best practice in the petroleum industry can promote change in employment policies. - Capacity development programmes in the petroleum industry could improve the way business is done, in effort to face the risk of being competitively left behind. - Continual research on capacity development programmes in the petroleum industry could contribute to developing or improving human capital functional and behavioural capacities. - The research on capacity development could contribute to improving the framework/model of human capacity development. - Capacity development could help individuals, petroleum industry and societies to strengthen and maintain capabilities, to set and achieve their own objectives.	- There exists a Co-function model, which is often used not to deliver education, but to respond to issue of common interest. This model helps to define the problem and find solution in the petroleum industry (QLR1). - People/employees use to go to external provider to assist in finding solution in order to improve model that contribute to human capital capacity development. Also, we develop or improve model of capacity development programmes in cooperation or partnership with academic institutions (QLR2). - The reason for suggesting a new model or improving the existing one depends on various factors, including objectives and current situations or environment of the organisation. After 5 years, there is an interview, which is often conducted in the HR department and faculty to find out if the existing model or programmes of human capacity development is still workable or it need to be reviewed, improved, or developed (QLR3). - Yes, due to some technical challenges, some of our workers use to go to DUT, MUT and other learning institution to learn more about their respective field. But a new model that can address the issue of technical skills development in the workplace could be necessary to respond to the need of the organisation (QLR4).
3. Capacity development programmes	- At a micro-level, the performance and development of the petroleum industry depends on a large extent to the skills/abilities/competencies development of the workforce.	- Capacity development is a vital key for organisational performance and innovation. It can facilitate or simplify managerial work (QLR5).

contribution to economic environment for socio-economic transformation.	- At a macro-level, human capacity development could contribute to economic growth both directly, through increase in productivity, and indirectly, by spurring innovation. - Capacity development in the petroleum industry could contribute to improving quality services that may increase the flow of petroleum products in the economy. - Efforts and resources expended towards addressing the triple challenge (poverty, unemployment, and inequality) will be in vain out of capacity development best practice.	- Capacity development can be a catalyst to socio-economic transformation through the development of sustainable small business, which will in turn create jobs and help alleviate poverty within the society (QLR6). - Capacity development can assist in upskilling South Africans and consequently contribute to growing the country's socio-economic transformation (QLR6). - Capacity development can contribute to economic growth and promote productivity improvement, more opportunities for job creation and lifestyle improvement of many poor people (QLR7).
4. Capacity development programmes contribution to social environment for socio-economic transformation.	- The research on capacity development in the petroleum industry could ensure the sustainability of skills development into the future. - The research on capacity development programmes could boost the politics of skills for employment, skills for competitiveness, and skills for poverty reduction. - Skills training programmes in the petroleum industry must include all levels of responsibilities (managerial, personnel, technical experts, and skilled/talents personnel training programmes). - Implementing adequate capacity development programmes could enhance opportunities for entrepreneurial skills development and individual well-being. - Capacity development could be more useful in supporting the South African vision of advancing economic transformation, social cohesion, and job creation and of reducing poverty and inequality.	- DUT is a provider of skills development in partnership with CHIETA, specifically in the field of chemical engineering. As a provider of capacity development, DUT should continually develop research on how model of capacity development programmes has to contribute on improving people capacities or skills at the workplace (QLR2). - Service providers of capacity development in the South African petroleum industry are local partners. SAPIA is in partnership with Rhode University and other corporate universities to develop local worker's capacity (QLR3). - Capacity development programmes provide more opportunities to develop new ideas (QLR4). - Yes, in terms of production process, skills providers are South African, but people from PETRONAS (Malesia's) use to come periodically to train local people when there is a need aligned to new technology or processing method (QLR5).

5. Capacity development programmes contribution to socio-economic transformation in South Africa	- Skills development programmes could foster a culture of innovation, creativity, competitiveness and boost the earnings of individuals and enhance opportunities for well-being - Capacity development programmes could be the engine of socio-economic transformation in supporting skills training that promotes integrity, accountability, trustworthiness, honesty, empathy, loyalty, solidarity... - Capacity development programmes can help developing individual/collective ability in visionary, initiative, reaching for excellence, and confidence. - Capacity development programmes can facilitate human capital access to public and private opportunities/facilities. - Capacity development programmes can empower individuals and leaders to increase the ability of fixing/repairing any wrong turn or provide skilled solutions to specific challenges/problems.	- Capacity development programmes empower people, organisations to produce and develop ideas that give ability to gain opportunities and minimise the risk of any detrimental threat that can affect the organisation (QLR6). - Capacity development programmes will assist in growing the country socio-economic and be more responsible in upskilling South Africans (QLR7). - Capacity development programmes could contribute to improving small and medium enterprises development and facilitate the management of new projects (QLR8). - Capacity development is power; it improves skills and increases knowledge. It also creates better opportunities for individuals (QLR9).

Section E: Objective 4: Investigating the extent to which capacity development programmes focussing on skills development has contributed to petroleum industry and socio-economic transformation in South Africa.

Factors	Themes: quantitative results (QNR)	Sub-themes: qualitative results (QLR)
1. The extent to which capacity development has contributed to the public sector for petroleum industry and socio-economic transformation	- The government and petroleum industry have worked together in engaging actions that improve policies, promote and support employees' skills development in the petroleum industry - The government and petroleum industry have not sufficiently engaged actions that support policies improvement to promote employees' technical skills development in the petroleum industry. - The government and petroleum industry are aware that human capacity development is crucial for petroleum industry development and socio-economic transformation but lack the best practice in the process of implementing the existing framework/model of capacity development that promote employees' technical skills development in the petroleum industry. - There was lack of satisfaction from the government and petroleum industry about the previous capacity development interventions services provided in the petroleum industry.	- There could be adequate Centre of excellence where skills training programmes are taking place in the petroleum industry or in the country. But, in most cases, the government organise the training of staff from various venues outside of the department (QLR1). - Each of the following organisation: SASOL, SAPREF, ENGEN have a skills training Centre (QLR1). - Actions to promote technical skills development are based on institutions like Durban University of Technology (DUT), which is a provider of chemical engineering skills training programmes, and which develop people capacity based on international model/standard (QLR2). - The necessary actions that both the South African government and the petroleum industry could put in place for petroleum industry development and socio-economic transformation consist of increasing awareness for human capital capacity development and creating a platform that facilitate the promotion of African (black) people to improve their skills/capacities and give them opportunities to enter and emerge competitively in the petroleum industry (QLR3) - Yes, there is satisfaction, but the industry must do more, integrate students to training programmes, improve internship programmes, and promote model of skills training programmes for workers capacity development in the workplace (QLR4).

		- No, existing Centres similar to those in USA, France or Europe; we don't have yet that standard in the country. There is need to build and develop an African Centre of excellence that could facilitate in developing African capacities, using several programmes of technical skills development (QLR5). - Yes, programmes call PECAS based on the technical process for production exist; but training per unit and per module is essentially indispensable to get upgraded or higher level of technical knowledge within the organisation (QLR6). - In some cases, we use to go to an external Centre for training and in some other cases we use to have training in the workplace (QLR7).
2. The extent to which capacity development has contributed to the private environment for petroleum industry and socio-economic transformation	- Skills training programmes are effectively and successfully established and implemented in the petroleum industry. - Actions have been successfully taken to improve the contribution of capacity development programmes for human capacity development and the overall petroleum industry development. - Efforts towards radical socio-economic transformation is wasted efforts out of human capacity/skills development and capacity development best practice.	- In some field, skills training programmes are successfully provided, but in many other fields where scarce skills are highly needed, more efforts are still required for technical capacity development programmes in the petroleum industry (QLR1). - Yes, depend on the area of skills training programmes; generally, there is satisfaction in terms of skills training programmes (QLR3). - Successful training programmes most often depend on organisational or individual goals in terms of motivations based on the field of study and the quality of programmes to be provided (QLR4). - Yes, there was successful skills training programmes in my field, as I am able myself to design a model material in my unit or department (QLR5). - Human capital is the strategic intent in the industry. Most oil companies impose skills development and results in improved performance are good (QLR6). - Organisational sustainability and community uplifted (QLR7). - Capacity development has improved most employees' confidence in their various tasks in the workplace (QLR8).
3. The extent to which capacity development has contributed to the economic environment for petroleum industry and socio-economic transformation	- The high cost of capacity development services (cost of skills training programmes) from capacity development programmes providers are one of the challenges affecting human capital capacity development in the petroleum industry. - There exists planned financial statements/budget for skills training programmes in the petroleum industry. - Capacity development in the petroleum industry has promoted and increased opportunities for entrepreneurship or related new small business development in the country.	- There are programmes that are registered with SAQA and they are mainly focussing on petroleum within chemical subsector (QLR2). - There is a budget settled to improve continuous learning programmes (workshop) in the workplace. There is also satisfaction on the improvement job quality and expectations (CHIETA), (QLR3). - All the time there is opportunity for skills training programmes. This depends on organisational objectives and requirements for the type of specific skills needed at a certain period of time (QLR4). - There are programmes that are registered with SAQA, and they are mainly focussing Petroleum within Chemical sector. There are also oil and gas programmes (QLR6). - Operators have been recruited to work off-shore and there has been upward mobility (QLR7). - I think capacity development is underutilised in the sector as it is regarded to be secondary to bottom line achievements (QLR8).
	- The petroleum industry has fostered progressive investment in human capacity development through the workplace learning programmes.	- Yes, there was satisfaction from local providers or mentors of capacity development, but it is my desire for the industry to develop more partnership with international providers in terms of developing

4. The extent to which capacity development has contributed to the social environment for petroleum industry development and socio-economic transformation	- Workers and managers in the petroleum industry have experienced satisfaction from previous capacity development programmes services received or provided. - Workers and managers at all levels have equal opportunities for work-related training programmes without gender-based discrimination. - There is sufficient funds/budget that supports the process of skills training programmes in the petroleum industry.	specific skills related to technological advancement. It is also my desire to participate in training programmes from other world regions (QLR1). - Participation to training programmes (short course) is often under personnel Department and development (QLR2). - Yes, due to various interactions, services provided have been successful. Generally, there was satisfaction in the provision of skills training programmes, but we are still experiencing some challenges in terms of technical skills development in the industry (QLR3). - Partnership between providers of skills training programmes and employers is vital, towards developing the skills of employees in the workplace. Such partnership must continue to go deeper in line with relevant programmes of skills development. We need to improve ourselves in adapting the business to a successful international model/standard. Improving and increasing partnership between employers in supporting capacity development programmes in the workplace could solve the issue of skills shortages, which affect the petroleum industry currently (QLR4). - Yes, there is satisfaction in local workers' skills improvement, but more technical skills training is still needed to absorb the shortages that the industry is experiencing (QLR5). - The petroleum industry pride itself as one of best industries to dedicate resources in capacity development of its staff (QLR6). - In-depth study needs to be explored or undertaken in this issue (extent to which capacity development programmes have contributed to petroleum industry and socio-economic transformation), (QLR7). - Capacity development has contributed immensely for both the employed and unemployed. Some of the unemployed individuals have subsequently managed to get employment opportunities due to capacity development programmes. It has assisted in the creation of job opportunities (QLR8). - Capacity development contributed to the promoting employees in the workplace, as well as to the increase of their salary (QLR9).

Section F: Objective 5: Identifying the probable challenges/barriers affecting the implementation of capacity development programmes in the South African petroleum industry

Factors	Themes: quantitative results (QNR)	Sub-themes: qualitative results (QLR)
1. Challenges /Barriers affecting the best practice of capacity development programmes in the public environment	• The lack of public ability to enforce policies that promote capacity development can result unfortunately in deficiency of human capital capacity development. • Unawareness or inadequate implementations of policies that support capacity development best practice can result on employees' skills deficiency in the petroleum industry.	- In my perception, in South Africa, we are good in developing policies or strategies in any sector, but implementation can be delayed because of financial constraint (QLR1). - The petroleum industry is experiencing a severe loss of experts that are going out, leaving the country for better conditions in other world regions (QLR2).

	• The lack of policies best practice in the petroleum industry can be a barrier to implementing successfully capacity development programmes. • The insufficient public funds/budget to sponsor technical skills development programmes can be one of the causes of skills shortages affecting the petroleum industry development process.	- There are available bursaries in the Department of Energy for employees that are willing to improve and increase more skills in their respective field of work (QLR3). - No many challenges in terms of funding concerning workers provision about skills training programmes in the workplace (QLR4). - One of the challenges to capacity development programmes is the cost in supporting service providers: Processing of payment is very slow and takes much longer than expected (years) (QLR5). - I think capacity development is underutilised in the workplace, whether in the public or private sector, as it is regarded to be secondary to bottom line in skilling workers' capacity development (QLR6). - In my perception (Respondent): with any sector in South Africa, we are good in developing any strategy, but the implementation can be delayed because of financial constrain (QLR7).
2. Challenges/ barriers affecting the best practice of capacity development programmes in the petroleum industry	- Technical skills shortages in the petroleum industry can be related to the lack of capacity development programmes best practice. - The petroleum industry is not fully addressing and supporting capacity development programmes as a tool that stimulate human capacity development - Technical skills shortages in the petroleum industry are a result of neglecting or lacking an appropriate model of capacity development as a vital tool to employees' technical skills development. - Capacity development programmes are not sufficiently explored, promoted, and used in strengthening the abilities of employees in the petroleum industry - The insufficient efforts in promoting capacity development as a tool that can reduce skills shortages are a barrier to human capital capacity development in the petroleum industry. - Barriers to human capacity development in the petroleum industry is aligned to employees' resistance to learning programmes in the workplace.	- Funding, lack of motivation, lack of monitoring with necessary effects are amongst barriers that obstruct the process of implementing capacity development programmes in the petroleum industry (QLR1). - There is a lot of models of capacity development programmes, such as several academic institutions in the country are providing workshops and training programmes that improve people skills and capacities (QLR2). - Commitment from students (employees) to capacity development programmes is amongst some issues that stand as barrier for human capital capacity development in the workplace (QLR4). - Challenges that affect the best practice or implementation of capacity development in the petroleum industry are mostly related to the time frame for students or trainees to be in class and at work, at the same time. Some training skills take long (9 months) and amongst the trainees, there are married people, which cannot cope with skills programmes that take long (QLR6). - Yes, there are some challenges related to capacity development programmes in the petroleum industry. In some cases, there are some workers that are not interested in skills training programmes. For example, supervisors and management mostly do not show interests to attend skills training programmes in the workplace (QLR8). - Worksite access for interns is a challenge (QLR9). - Challenges exist, but we are very dynamic in dealing with them straight away (QLR5).

		- Being away from work and leaving work for outdoor training programmes is a challenge, due to more workload to be managed thereafter. Workshops and training programmes provided indoor or in the workplace could be effective, feasible and much easier to manage (QLR6). - In-depth study should be undertaken for additional challenges/barriers to capacity development interventions in the petroleum industry (QLR7). - Limited availability of funds to implement capacity development programmes and the unnecessary bureaucracy, which might exist within the sector are amongst the challenges affecting the best practice of capacity development programmes in the South African petroleum industry (QLR8).
3. Challenges/ barriers affecting the best practice of capacity development programmes in the economic environment	- Skills shortages in the petroleum industry are very often related to the lack of available financial resources to support the training of technical skills programmes. - Companies which are lacking capacity development programmes best practice are as well suffering the lack of innovation, lack of creativity and lack of competitiveness. - Neglecting capacity development best practice can cause or affect the business environment deterioration and reduce efforts for socio-economic transformation process in the country.	- Capacity development is not cheap, but expensive. A 1-year programmes can cost approximately R 140,000 (QLR1). - Funding is available to support employees that would like to improve or increase their level of education in various academic institutions (QLR2). - The process of funding management to service providers of capacity development is still an issue for many partners or organisations; they take a lot of time to make available the fund for employees' capacity development (QLR3). - Capacity development programmes are important in the way that it contribute to sharing innovative ideas to the fellow employees in the workplace. Capacity development programmes therefore improve the ability of workers to develop and share ideas that promote the organisation (QLR4). - Lack of motivation to skills development programmes (Some employees are lazy), (QLR6).
4.Challenges/barriers affecting the best practice of capacity development programmes in the social environment	- Technical skills shortages affecting the petroleum industry is related to employees' lack of interest to technical skills training programmes provided. - The lack of mentorship programmes or capacity development programmes providers can be considered as one of the key challenges affecting human capital capacity development in the petroleum industry. - The lack of appropriate mechanisms for monitoring and evaluating capacity development frameworks is a critical issue affecting human capacity development in the petroleum industry.	- There exist local providers of capacity development programmes. I participated in training programmes just for a certificate. There was no new information; the provider/lecturer was not good enough about required and expected information (QLR2). - Local providers of capacity development programmes in partnership with CHIETA and petroleum industry's organisations in terms multi-skills development in the workplace, in the KZN province, include public academic institutions such as: DUT, UKZN, MUT, etc., and private institutions such as: (SANTEC, TEMESSON, etc.) (QLR3). - Yes, there are local providers of capacity development programmes in the South African petroleum industry (QLR4).

Section G: Objective 6: Exploring the international models of capacity development programmes that promote human capital capacity development, petroleum industry development and socio-economic transformation

Factors	Themes: quantitative results (QNR)	Sub-themes: qualitative results (QLR)
1. Capacity development programmes models effects on the public environment for petroleum industry development and socio-economic transformation.	- International models of capacity development programmes can be used as a reference to improve government policies that support human capital capacity development. - International models of capacity development programmes can be used as a tool by the government and the petroleum industry in promoting technical skills development in the petroleum industry. - The international models of capacity development programmes could help the government and petroleum industry in setting a new and progressive framework that promotes technical skills development or human capital capacity development.	- Yes, interest from new ideas/information that can come from various international people can be profitable to support local human capital capacity development (QLR2). - No, international model of capacity development programmes cannot be used as reference, because they have different objectives. For example, in South Africa we are not ready to use self-services in certain field of socio-economic activities (QLR1). - Any international facilitations for capacity development programmes usage could help in the training process of local trainers in South Africa, but I am not aware of any existing international cooperation that facilitate human capital capacity development in the country (QLR2). - The Department of Energy as a whole and particularly, the petroleum industry sub-sector is in need of an improved model that can increase people capacity as well as transparency, effectiveness and efficiency in the workplace (QLR3). - Yes, international models of capacity development programmes can be used as reference to improve local model of human capital capacity development in the petroleum industry (QLR4). - India has a good model. We can take and adapt that model to local reality or need for human capital capacity development. Yes, there can be various benefits if an organisation can use or adapt an international model of capacity development programmes in line with it defined objectives for productivity, innovation, and competitiveness (QLR5). - People from Malesia use to come with their own model of capacity development programmes and train local workers using their culture on how things should be done (QLR6).
2. Capacity development programmes models effects on the private environment for petroleum industry development and socio-economic transformation.	- The South African petroleum industry could increase its influence in contributing to socio-economic activities by effects of improving capacity development framework adapted from the international models' perspective. - New investments on human capital capacity development can promote technical skills development in the petroleum industry. - Capacity development programmes need to be continually explored in the petroleum industry for future requirements on human capacity development.	- Continuous review of skills training programmes offered to workers and managers each year could be useful in supporting petroleum industry development process in the country (QLR1) - There is an annual and 6 months programme that comes often once a year (QLR2) - There is a model that calls PRALS in the Energy sector, which is a system that promotes capacity development programmes for employees' capacity development (QLR3). - Capacity development programmes need to be continually explored in line with new experience, opportunities, and requirements for organisational development. Yes, a model such as the CDP-PUSH-Effects can help if it can address organisational need for an increased productivity, innovation, and development (QLR4).

3. Capacity development programmes models effects on the economic environment for petroleum industry development and socio-economic transformation.	-Upgraded capacity development model/framework could contribute to promoting the petroleum industry value chain activities such as crude oil, Head office, refinery, distribution, storage, wholesale, and retail activities upgrading. - Improved capacity development model in the petroleum industry could contribute on promoting human capacity development in various other related industries.	- Yes, it can be agreed that an improved or new model of capacity development in the petroleum industry could promote change in various areas, but most importantly, model must be developed in link with organisations objectives for growth and development (QLR1). - Models of capacity development must develop mechanism that contributes to supporting and retaining local expert workers (scarce technical skills) within the organisation and the country (QLR2). -Yes, an improved model can be useful, but not necessary, because in many cases, public or private organisations are not paying much attention on the real needs of the industry. A new or improved model of capacity development programmes must focus on the impacts over the objectives of the industry (QLR3). - Yes, we need to be flexible to accommodate an improved/new model of capacity development, if it can address the need of the industry generally, and specifically, those of organisations operating in the petroleum industry (QLR4). - Yes, a new model can be welcome in promoting the skills of workers in the petroleum industry. But such model needs to be flexible in adapting itself to the objectives and expectations of the petroleum industry (QLR5). - Government and petroleum industry can agree together for a model of capacity development that will retain or keep people with technical skills in the country (QLR6).
4. Capacity development programmes models effects on the social environment for petroleum industry development and socio-economic transformation.	- Capacity development models could indicate the way the petroleum industry may evaluate capacity development services in terms of skills acquisition and usage. - Models of capacity development could be useful in creating opportunity to pair South African firms with leading international companies in terms of human skills development. - Developing model of capacity development in the petroleum industry could reduce dependence on international expert about skills training programmes (international skills programmes providers).	- Models of capacity development can assist South Africa to be on the same level with international industries (QLR6). - Yes, cooperation through organisations in the continent and from different continents exists in terms of facilitating capacity development programmes and training of local people. But such cooperation needs to be reviewed, improved, and developed in line with continental requirement for socio-economic activities development (QLR7). - Any fruitful cooperation with international facilitators of capacity development programmes can support the training of local trainers in terms of improving local skills development in the petroleum industry (QLR8). - Yes, there is cooperation with Malesia's facilitators of capacity development programmes, which support the training of local workers (QLR9).
5. Models of capacity development programmes that promote human capital capacity development, petroleum	- The petroleum industry will need an appropriate framework/model that is similar to developed petroleum industries from other world regions. - The development of any framework/model for human capacity development should refer to those implemented by developed petroleum industry, to improve the local one.	- Models of capacity development programmes contribute on improving and increasing the experience of employees in the workplace. Access to programmes of capacity development gives opportunities to people to become able to serve their organisations and countries (QLR5). - Models of capacity development programmes will assist RSA to be on the same level with international industries (QLR6).

industry development and socio-economic transformation		-Local model should be evaluated against international benchmark/standards (QLR7). - International models of capacity development programmes could assist South Africa by saving costs on research by implementing capacity development programmes based on best practice and lessons learnt by other countries. It could contribute towards the promotion of socio-economic transformation through jobs creation and upskilling the current workforce (QLR8).

Section H: Objective 7: Developing an appropriate capacity development-best practice model aligned to human capacity development for the South African petroleum industry development and socio-economic transformation

Factors	Themes: quantitative results (QNR)	Sub-themes: qualitative results (QLR)
1. Government benefits from potential CDP-PUSH-Effects framework usage in the petroleum industry.	- Active partnership between the government, financial institutions, and petroleum industry could be imperative in terms of supporting/financing capacity development programmes in the oil field. - More efforts are needed to improve the contribution of capacity development programmes for petroleum industry performance and socio-economic transformation process in the country.	- There is mitigated satisfaction in terms of capacity development programmes services provided until now; more efforts are required for scarce skills development in the petroleum industry (QLR1). - There is cooperation with other partners, where people from the head office usually go to overseas for training programmes (QLR2). - The Department of Energy provides training programmes to employees, but an improved approach will make it more efficient and effective for employees' performance improvement in the workplace (QLR3). - From experience gained, it can be agreed that workshop, training programmes and dynamic conference was successful. Therefore, there is satisfaction with capacity development services provided in the industry (QLR5).
2. Benefits from the proposed CDP-PUSH-Effects model usage in the petroleum industry.	- The CDP-PUSH-Effects model could bring together local and international experts to improve the best practice of capacity development programmes in the petroleum industry. - The CDP-PUSH-Effects model could guide the petroleum industry's experts in generating similar results to those seen in developed countries. - A new dynamic capacity development model could contribute to promote the oil field services development with an emphasis on human capital capacity development.	-Local and international trainers of capacity development programmes are needed in specific field, in supporting employees' capacity development in the workplace (QLR3). - Job creation could be one of the outcomes of a model that supports human capital capacity development in the petroleum industry or in the country (QLR4). - Yes, there could satisfaction in some field, but not in various other fields. Change sometimes comes with the fear to adapt to a new culture or system. Capacity development programmes brings not only change or improvement, but also challenges on how new knowledge/skills should be put into practice (implementation) (QLR5). - This model can promote skills development in the petroleum industry (QLR6).
3. Socio-economic benefits from the proposed CDP-PUSH-Effects	- The CDP-PUSH-Effects model could be a significant tool, which could facilitate solutions to existing/old problems aligned to skills shortages in the petroleum industry.	- A model of capacity development programmes that engage the Energy Department in partnership with students from universities and colleges to facilitate training or workshop programmes could be profitable to all (QLR1).

model usage in the petroleum industry.	- The CDP-PUSH-Effects model could create opportunities for new projects in terms of capacity development interventions in different subsector of the petroleum industry and in other various related sectors of the economy. - A new or improved model of capacity development such as the CDP-PUSH-Effects model usage in the petroleum industry could reduce dependence on foreign resources/expertise. - A new/improved model of capacity development programmes is imperative for the petroleum industry development and socio-economic transformation in the country.	- Workshop from the Department of Energy in order for experts to share their experience or knowledge to students could be a vital approach in facilitating and promoting knowledge exchange and acquisition from employees to students and vice versa (QLR2). - Model of capacity development should provide approaches where people from different Department must interact with students through exposition and workshop in terms of capacity development programmes (QLR3). - A new model of capacity development programmes could be essential to improve the existing one in the petroleum industry (QLR4) - An improved model can be suggested to promote productivity and competitiveness in the public or private sector (QLR5).
4. Social benefits from potential CDP-PUSH-Effects framework usage in the petroleum industry.	- The CDP-PUSH-Effects model could generate greater opportunity in training and transferring knowledge, based on petroleum industry policies and priorities improvement. - The CDP-PUSH-Effects model could promote local expertise and contribute to local realities. - The CDP-PUSH-Effects model suggest that workforce skills development programmes should be aligned to employees' specific skills background and to their experience gained in the workplace. - Paying attention to the real issue of technical skills shortages in the petroleum industry is imperative for developing a model of capacity development programmes that will promote human capacity development now and into the future.	- The recruitment of right people and continual training of employees with specific programmes aligned to the need/aim/objectives of the South African petroleum industry could contribute to solving the issue technical skills shortages in the petroleum industry (QLR1). - The focus should be in training people that are ready to enter newly the world of work to give them ability to become more creative and give them the aptitude to manage and deal with technology. Give them capability to develop new skills and to share incoming new knowledge/ideas with others in the workplace (QLR2). - The improvement of existing model of capacity development programmes in the workplace may also contribute to facilitating technical skills development in the petroleum industry (QLR3). - Organisations in the petroleum industry in partnership with academic institutions like DUT, should develop a model or programmes that allow working engineers to share their experience to students from engineering Department, as well as lecturers from academic institutions should develop a viable partnership with petroleum industry's organisations in terms of improving the skills of workers by providing them with fresh and new ideas/ knowledge (QLR4)
5. CDP-PUSH-Effects framework impacts for the petroleum industry development and socio-economic transformation in South Africa.	- The CDP-PUSH-Effects model could create opportunities for tackling skills shortages and strengthening local workforce capacity development. - The CDP-PUSH-Effects model could influence policies and goals reforms in terms of employees' capacity development. - The CDP-PUSH-Effect model could be a recommended model to be used in tackling skills shortages and in facilitating employees' capacities development in the petroleum industry.	- There exists a model for employees' capacity development called Performance assessment appraisal. There is a regular practice of training and workshop. Existing model can be improved to make it more compulsory. Employees at certain period should have training programmes (QLR1). - Positively, it can be agreed that an improved or new model of capacity development programmes can be one of the approaches, which may help in tackling skills shortages or developing scarce skills whether in the petroleum industry or in the country as a whole (QLR2). - The petroleum industry must support a model that promotes scarce skills, which must be adaptable and responsive to the sector needs (QLR8). - Petroleum industry should have a few centres of excellence-based strategically in South Africa to focus on sector specific needs (QLR9).

Appendix E: Table 6.3: MV Data Descriptive

	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
GENDER	1.459	1.000	1.000	2.000	0.498	-1.986	0.166
AGE	3.337	3.000	2.000	6.000	0.904	-0.538	0.078
QUALIF	3.105	3.000	2.000	5.000	0.844	-0.582	0.070
CURRENT OCC	1.325	1.000	1.000	3.000	0.641	1.723	1.771
YEAR OF WORK EXP	2.106	1.000	1.000	3.000	0.641	0.184	0.690
RACE GROUP	1.414	1.000	1.000	4.000	0.870	1.466	1.757
ACDM1.1	4.390	4.000	3.000	5.000	0.595	-0.675	-0.401
ACDM1.2	4.281	4.000	3.000	5.000	0.611	-0.607	-0.246
ACDM2.1	3.997	4.000	1.000	5.000	0.733	0.587	-0.519
ACDM2.2	4.000	4.000	2.000	5.000	0.745	-0.247	-0.350
ACDM2.3	4.038	4.000	3.000	5.000	0.626	-0.445	-0.028
ACDM3.1	4.024	4.000	3.000	5.000	0.570	0.096	0.003
ACDM3.2	3.952	4.000	3.000	5.000	0.595	-0.172	0.015
ACDM3.3	3.983	4.000	2.000	5.000	0.659	-0.477	-0.054
ACDM3.4	3.901	4.000	3.000	5.000	0.568	0.025	-0.013
ACDM4.1	4.106	4.000	3.000	5.000	0.624	-0.466	-0.079
ACDM4.2	4.079	4.000	3.000	5.000	0.589	-0.143	-0.018
ACDM4.3	4.007	4.000	3.000	5.000	0.641	-0.556	-0.006
ACDM4.4	4.021	4.000	3.000	5.000	0.624	-0.424	-0.014
ACDM5.1	3.983	4.000	3.000	5.000	0.539	0.463	-0.014
ACDM5.2	4.031	4.000	3.000	5.000	0.576	0.031	0.001
ACDM5.3	3.938	4.000	3.000	5.000	0.552	0.262	-0.031
CCDP1.1	3.945	4.000	2.000	5.000	0.685	-0.192	-0.186
CCDP1.2	4.082	4.000	2.000	5.000	0.726	0.827	-0.720
CCDP1.3	4.096	4.000	1.000	5.000	0.834	1.195	-1.071
CCDP1.4	4.007	4.000	1.000	5.000	0.907	0.213	-0.845
CCDP2.1	3.818	4.000	1.000	5.000	0.905	-0.258	-0.551
CCDP2.2	3.346	3.000	1.000	5.000	1.156	-0.785	-0.196
CCDP2.3	3.452	3.000	1.000	5.000	1.051	-0.184	-0.416
CCDP3.1	2.866	3.000	1.000	5.000	0.840	-0.200	-0.406

CCDP3.2	3.568	4.000	1.000	5.000	0.651	0.984	-0.631
CCDP3.3	3.973	4.000	3.000	5.000	0.702	-0.965	0.038
CCDP4.1	3.260	3.000	1.000	5.000	1.108	-0.428	-0.392
CCDP4.2	3.387	4.000	1.000	5.000	1.062	-0.453	-0.547
CCDP4.3	3.493	4.000	1.000	5.000	0.830	0.484	-0.919
CCDP5.1	3.339	3.000	1.000	5.000	0.928	-0.297	-0.362
CCDP5.2	3.418	3.000	1.000	5.000	0.830	-0.453	-0.152
CCDP5.3	3.144	3.000	1.000	5.000	0.899	-0.302	-0.288
CDPC1.1	4.099	4.000	3.000	5.000	0.609	-0.338	-0.053
CDPC1.2	4.062	4.000	3.000	5.000	0.417	2.559	0.403
CDPC1.3	4.082	4.000	3.000	5.000	0.476	1.250	0.242
CDPC2.1	3.904	4.000	2.000	5.000	0.710	-0.349	-0.148
CDPC2.2	4.120	4.000	2.000	5.000	0.576	0.380	-0.114
CDPC2.3	3.973	4.000	2.000	5.000	0.646	0.996	-0.511
CDPC2.4	4.051	4.000	2.000	5.000	0.586	0.303	-0.111
CDPC2.5	4.113	4.000	3.000	5.000	0.571	-0.036	0.005
CDPC3.1	3.870	4.000	1.000	5.000	0.988	0.735	-0.978
CDPC3.2	4.113	4.000	3.000	5.000	0.686	-0.875	-0.149
CDPC3.3	4.161	4.000	2.000	5.000	0.671	0.837	-0.612
CDPC3.4	3.901	4.000	1.000	5.000	0.815	2.652	-1.225
CDPC4.1	3.938	4.000	2.000	5.000	0.700	0.271	-0.397
CDPC4.2	3.911	4.000	2.000	5.000	0.758	-0.415	-0.229
CDPC4.3	4.267	4.000	2.000	5.000	0.720	0.696	-0.838
CDPC4.4	3.921	4.000	2.000	5.000	0.715	-0.093	-0.279
CDPC4.5	4.127	4.000	2.000	5.000	0.668	0.805	-0.567
CDPC5.1	4.051	4.000	3.000	5.000	0.663	-0.720	-0.057
CDPC5.2	4.140	4.000	3.000	5.000	0.553	0.060	0.053
CDPC5.3	4.062	4.000	3.000	5.000	0.704	-0.981	-0.087
CDPC5.4	3.798	4.000	3.000	5.000	0.705	-0.966	0.308
CDPC5.5	3.890	4.000	3.000	5.000	0.615	-0.402	0.070
ContFac1.1	4.449	5.000	2.000	5.000	0.693	0.206	-0.994
ContFac1.2	4.370	4.000	3.000	5.000	0.625	-0.651	-0.470
ContFac1.3	4.233	4.000	3.000	5.000	0.668	-0.794	-0.308

ContFac2.1	4.147	4.000	3.000	5.000	0.679	-0.843	-0.192
ContFac2.2	4.288	4.000	2.000	5.000	0.687	-0.550	-0.508
ContFac2.3	4.322	4.000	2.000	5.000	0.590	-0.065	-0.335
ContFac3.1	4.360	4.000	2.000	5.000	0.595	-0.095	-0.425
ContFac3.2	4.404	4.000	2.000	5.000	0.658	-0.200	-0.731
ContFac3.3	4.247	4.000	3.000	5.000	0.652	-0.731	-0.301
ContFac3.4	4.260	4.000	2.000	5.000	0.652	-0.382	-0.399
ContFac3.5	4.390	4.000	3.000	5.000	0.595	-0.675	-0.401
ContFac4.1	4.637	5.000	2.000	5.000	0.595	1.726	-1.521
ContFac4.2	4.209	4.000	2.000	5.000	0.745	-0.750	-0.460
ContFac4.3	3.884	4.000	2.000	5.000	0.868	-0.683	-0.309
ContFac5.1	3.918	4.000	3.000	5.000	0.636	-0.538	0.071
ContFac5.2	4.055	4.000	3.000	5.000	0.649	-0.626	-0.054
ContFac5.3	4.212	4.000	3.000	5.000	0.622	-0.566	-0.182
IMCD1.1	3.750	4.000	1.000	5.000	0.833	0.130	-0.181
IMCD1.2	3.777	4.000	1.000	5.000	0.825	0.627	-0.523
IMCD1.3	3.962	4.000	1.000	5.000	0.873	0.491	-0.609
IMCD2.1	4.072	4.000	1.000	5.000	0.686	0.366	-0.349
IMCD2.2	4.144	4.000	1.000	5.000	0.726	-0.009	-0.443
IMCD2.3	4.140	4.000	1.000	5.000	0.705	0.221	-0.441
IMCD3.1	4.089	4.000	2.000	5.000	0.672	-0.544	-0.175
IMCD3.2	4.092	4.000	2.000	5.000	0.621	-0.096	-0.150
IMCD4.1	4.027	4.000	3.000	5.000	0.624	-0.424	-0.019
IMCD4.2	3.911	4.000	3.000	5.000	0.677	-0.818	0.110
IMCD4.3	3.932	4.000	3.000	5.000	0.737	-1.154	0.109
IMCD5.1	3.873	4.000	2.000	5.000	0.812	0.350	-0.730
IMCD5.2	3.887	4.000	1.000	5.000	0.834	1.702	-0.958
NCDvT1.1	4.253	4.000	2.000	5.000	0.660	-0.099	-0.473
NCDvT1.2	3.788	4.000	2.000	5.000	0.796	-0.177	-0.379
NCDvT1.3	3.795	4.000	1.000	6.000	1.030	0.849	-0.960
NCDvT2.1	4.021	4.000	3.000	5.000	0.702	-0.967	-0.029
NCDvT2.2	3.918	4.000	3.000	5.000	0.561	0.121	-0.022
NCDvT2.3	4.247	4.000	3.000	5.000	0.580	-0.444	-0.089

NCDvT3.1	4.007	4.000	2.000	5.000	0.781	-0.107	-0.489
NCDvT3.2	4.151	4.000	3.000	5.000	0.553	0.023	0.053
NCDvT3.3	3.921	4.000	1.000	5.000	0.870	2.794	-1.382
NCDvT3.4	4.092	4.000	2.000	5.000	0.799	-0.813	-0.371
NCDvT3.5	4.140	4.000	2.000	5.000	0.639	2.612	-0.924
NCDvT3.6	4.229	4.000	3.000	5.000	0.548	-0.261	0.066
NCDvT4.1	4.130	4.000	2.000	5.000	0.685	0.800	-0.623
NCDvT4.2	4.079	4.000	3.000	5.000	0.527	0.521	0.086
NCDvT4.3	4.144	4.000	2.000	5.000	0.523	1.038	0.015
NCDvT5.1	4.089	4.000	3.000	5.000	0.602	-0.270	-0.039
NCDvT5.2	4.178	4.000	3.000	5.000	0.638	-0.620	-0.174
NCDvT5.3	3.962	4.000	2.000	5.000	0.795	0.032	-0.549
SCDP1.1	3.397	3.000	2.000	5.000	0.836	-0.551	0.098
SCDP1.2	3.332	3.000	2.000	5.000	0.825	-0.467	0.197
SCDP1.3	3.497	4.000	1.000	5.000	0.893	0.559	-0.743
SCDP1.4	3.264	3.000	2.000	5.000	0.782	-0.095	0.405
SCDP2.1	3.839	4.000	2.000	5.000	0.939	-0.593	-0.497
SCDP2.2	3.623	4.000	2.000	5.000	0.837	-0.386	-0.395
SCDP2.3	3.271	3.000	1.000	5.000	0.950	0.064	-0.372
SCDP3.1	3.411	3.000	2.000	5.000	0.837	-0.617	-0.051
SCDP3.2	3.788	4.000	2.000	5.000	0.796	-0.717	-0.010
SCDP3.3	3.466	3.000	2.000	5.000	0.919	-0.749	0.514
SCDP4.1	3.801	4.000	2.000	5.000	0.833	-0.933	0.029
SCDP4.2	3.473	3.000	2.000	5.000	0.627	-0.253	0.062
SCDP4.3	3.531	4.000	1.000	5.000	0.934	-0.181	-0.229
SCDP4.4	3.685	4.000	2.000	5.000	0.916	-0.891	-0.059

Appendix F: Table 6.4: Outcome of the EFA

	ACDM Objective 7	CCDP Objective 5	CDPC Objective 3	ConFact Objective 1	IMCD Objective 6	NCDvt Objective 2	SCDP Objective 4
ACDM1.1	0.032						
ACDM1.2	0.040						
ACDM2.1	0.043						
ACDM2.2	0.058						
ACDM2.3	0.069						
ACDM3.1	0.075						
ACDM3.2	0.076						
ACDM3.3	0.051						
ACDM3.4	0.071						
ACDM4.1	0.060						
ACDM4.2	0.064						
ACDM4.3	0.063						
ACDM4.4	0.077						
ACDM5.1	0.066						
ACDM5.2	0.070						
ACDM5.3	0.064						
CCDP1.1		0.134					
CCDP1.2		0.068					
CCDP1.3		0.084					
CCDP1.4		0.150					
CCDP2.1		0.088					
CCDP2.2		0.150					
CCDP2.3		0.137					
CCDP3.1		0.118					
CCDP3.2		0.170					
CCDP3.3		0.150					
CCDP4.1		0.138					
CCDP4.2		0.007					
CCDP4.3		0.105					

CCDP5.1		0.073					
CCDP5.2		0.026					
CCDP5.3		0.025					
CDPC1.1			0.120				
CDPC1.2			0.107				
CDPC1.3			0.111				
CDPC2.1			0.077				
CDPC2.2			0.064				
CDPC2.3			0.104				
CDPC2.4			0.079				
CDPC2.5			0.053				
CDPC3.1			0.044				
CDPC3.2			0.055				
CDPC3.3			0.072				
CDPC3.4			0.122				
CDPC4.1			0.088				
CDPC4.2			0.071				
CDPC4.3			0.028				
CDPC4.4			0.049				
CDPC4.5			0.080				
CDPC5.1			0.077				
CDPC5.2			0.139				
CDPC5.3			0.058				
CDPC5.4			0.042				
CDPC5.5			0.046				
ContFac1.1				0.063			
ContFac1.2				0.115			
ContFac1.3				0.126			
ContFac2.1				0.122			
ContFac2.2				0.086			

ContFac2.3				0.057			
ContFac3.1				0.091			
ContFac3.2				0.077			
ContFac3.3				0.097			
ContFac3.4				0.111			
ContFac3.5				0.087			
ContFac3.5	0.075						
ContFac4.1				0.058			
ContFac4.1	0.067						
ContFac4.2				0.129			
ContFac4.2	0.109						
ContFac4.3				0.099			
ContFac4.3	0.086						
ContFac5.1				0.130			
ContFac5.1	0.083						
ContFac5.2				0.123			
ContFac5.2	0.098						
ContFac5.3				0.102			
ContFac5.3	0.078						
IMCD1.1					0.070		
IMCD1.2					0.068		
IMCD1.3					0.091		
IMCD2.1					0.088		
IMCD2.2					0.091		

IMCD2.3					0.109		
IMCD3.1					0.100		
IMCD3.2					0.107		
IMCD4.1					0.115		
IMCD4.2					0.145		
IMCD4.3					0.111		
IMCD5.1					0.123		
IMCD5.2					0.099		
NCDvT1.1						0.108	
NCDvT1.2						0.088	
NCDvT1.3						0.096	
NCDvT2.1						0.093	
NCDvT2.2						0.103	
NCDvT2.3						0.078	
NCDvT3.1						0.039	
NCDvT3.2						0.115	
NCDvT3.3						0.077	
NCDvT3.4						0.111	
NCDvT3.5						0.149	
NCDvT3.6						0.108	
NCDvT4.1						0.062	
NCDvT4.2						0.152	
NCDvT4.3						0.096	
NCDvT5.1						0.112	
NCDvT5.2						0.087	
NCDvT5.3						0.082	
SCDP1.1							0.168
SCDP1.2							0.038
SCDP1.3							0.081
SCDP1.4							-0.246
SCDP2.1							0.307
SCDP2.2							0.275
SCDP2.3							0.074

SCDP3.1							-0.234
SCDP3.2							0.030
SCDP3.3							0.000
SCDP4.1							0.245
SCDP4.2							0.307
SCDP4.3							0.168
SCDP4.4							-0.439