

CHALLENGES AFFECTING THE BEST PRACTICE OF CAPACITY DEVELOPMENT PROGRAMMES IN THE SOUTH AFRICAN PETROLEUM INDUSTRY

Eustache TanzalaKikasu, Durban University of Technology (DUT)

Nirmala Dorasamy, Durban University of Technology (DUT)

ABSTRACT

Capacity development programmes in the workplace, whether in the public or private sectors play a strategic role by increasing the ability of people, organisation and society to cope with or adapt to challenging and adverse situations that affect organisations or systems societies depend upon. This paper explores the challenges affecting the best practice of capacity development programmes in the South African petroleum industry. The political, economic and social factors of the PESTIE environment were examined to addressing and identifying barriers affecting the best practice of capacity development programmes in the South African petroleum industry. The heart of the phenomenon challenging the South African petroleum industry is that the petroleum industry is experiencing a critical deficit of technical skilled employees in areas that include Electrician; Boiler maker; Mechanical engineer; Safety, Health, Environment and Quality (SHE&Q) practitioner; Programme or Project Manager; Mechanical Fitter; Electrical Engineer; Retail Pharmacist and Chemist, etc. These technical skills are not sufficiently developed, as there are still critical issues aligned to technical skills shortages, as well as a strong demand of these categories of technical skills in the South African petroleum industry. Furthermore, in general, organisations whether in the public or private sectors of the national economy are also challenged by the deficit of positive human capital capacity and skills waste, which are obstructing the attempt to organisational/institutional vision, mission, goals and objectives achievement.

In other words, the lack of capacity development best practice in the petroleum industry, associated with the aforementioned challenges are preventing organisations members of the South African Petroleum Industry Association (SAPIA) to gain competitive advantages, to improve productivity, performance and contribute to socio-economic transformation process in the country. The triangulation methods facilitated the gathering of quantitative and qualitative data from four petroleum organisations, which were part of the investigations in order to identify the challenges affecting the best practice of capacity development programmes in the South African petroleum industry. Results revealed that challenges impacting negatively the petroleum industry are related to the political, economic and social factors. For example, respondents revealed that the lack of policies best practice (83.4%), the lack of capacity development programmes best practice (90.5%) and the lack of fully addressing and supporting capacity development programmes as a tool that can stimulate human capital capacity development in the workplace (91.7%) are amongst the key barriers affecting technical skills development in the petroleum industry. Thus, capacity development programmes best practice in the petroleum industry is assumed to be the locomotive of scarce skills development in the South African petroleum industry.

Keywords: Capacity Development Programmes, Scarce Skills Development, Petroleum Industry Development and Socio-Economic Transformation

INTRODUCTION

Challenges Affecting the Best Practice of Capacity Development Programmes in the South African Petroleum Industry

Capacity development programmes is an approach that addresses in a continuous manner specific issues at institutional/organisational, socio-economic, environmental, and infrastructure levels, with aim of improving the delivery of adequate services, boosting organisational competitive advantages, improving productivity and meeting sustainable development goals (Andreoni, 2016). In the workplace, capacity development, if proficiently applied, can be a significant socio-economic resource and a foremost key factor that can guarantee the development of employees' skills, abilities, talents, performance and values, as well as to enabling organisational perspective for improved innovation, efficiency and sustainable growth. In the context of organisational development, (Kruger, 2019) postulated 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 implies that organisational operations or processes must own/possess an industrial/development aptitude or ability to produce sufficient and required quality products or services that contribute to economic growth and 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, 2016). 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/programmes 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), internationally, there is an emerging agreement in the developing community that capacity development is 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).

Therefore, capacity development programmes best practice as a locomotive or driving force for human capital capacity development can in future increase employees' ability for problem-solving, creativity, critical thinking, collaboration and develop invaluable skills needed for the fourth industrial revolution. However, although the significant role that capacity development programmes could play to help improving or developing operations, structures or system in the public or private organisations, particularly in the South African petroleum industry, there are numerous barriers, which are preventing the best practice of capacity development programmes from yielding the highest planned results in line with the predictable standard in the petroleum industry. In this paper, challenges related to technical skills shortages, the deficit of positive human capital capacity and skills waste were examined in link with the political, economic and social components of the PESTIE factors. Therefore, the results of this study revealed that most challenges affecting the best practice of capacity development in the South African petroleum industry are mainly associated or caused by neglecting or lacking awareness ability to manage efficiently the available resources in order to support mechanism that promotes capacity development best practice as a vital tool to stimulating employees' skills development in the workplace. Accordingly, capacity development programmes takes account of components that include teaching someone to do something; to do it better; efforts to support or build innovative 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). In

addition, the (UNDP, 2009) stated that an essential ingredient of a capacity development approach is “transformation”. Transformation involves new/additional investments in order to bring or realise expected change that can contribute to organisational development and socio-economic transformation.

In other words, transformation simply means change or improvement. In this study, capacity development best practice was expected to link human capital capacity development to organisational competitive advantages improvement. Therefore, in this paper, the concept ‘transformation’ consists of becoming something else beyond change and improvement; it means innovation. By means of linking capacity development programmes to human capital capacity development, organisations are expected to generate transformation that includes improved competitive advantages, increased productivity and performance, and socio-economic transformation. Thus, in this paper, capacity development programmes is examined as a key strategy to promoting technical skills development, positive human capital capacity development, and skills waste alleviation in the workplace.

Background to Capacity Development Programmes in the South African Petroleum Industry

According to Kruger (2019), skills development is one of the most important components of the Broad-Based Black Economic Empowerment (B-BBEE), which is the government’s strategic initiative to promote socio-economic transformation in order to ensure meaningful participation by black 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) which seek to get involved in private-public partnerships and which are also expected to contribute to the achievement of the objectives of the B-BBEE. Therefore, it is necessary to highlight that the South African society and organisations (petroleum industry) are actually experiencing and enduring critical socio-economic problems, which are related to the deficit of positive human capital capacity. Nevertheless, amongst the most critical challenges affecting the South African society and organisations, there are issues like technical skills shortages, unemployment, inequality, poverty, xenophobia/afro-phobia and Gender Based Violence (GBV): 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 insufficient scarce skills development of professional operators such as chemical engineers, process technologists, mechanical engineers, geologists and electrical engineers (CHIETA Report, 2014). However, by looking closely at these challenges, this paper attempted to align to the aim and purpose of the B-BBEE code of good practice, which objectively consider skills development as a key strategy for business growth and social transformation. Yet, boosting productivity, performance, innovation, creativity and ensuring competitive advantages in the petroleum industry; as well as supporting the socio-economic transformation process in the country is the intend that capacity development programmes best practice envisage to have, by improving or developing technical skills, positive human capital capacity and alleviating skills waste in the public and private organisations. Accordingly, 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. The significance of this study was to alert stakeholders in the petroleum industry that capacity development programmes best practice is one of the key approaches that can assist to bridging the gaps of scarce skills in the public or private sectors, including the South African petroleum industry. Thus, in attempting to so, efforts and resources should be firstly invested on changing or improving policies that support the development of human capital capacity, prior to undertake other alternative measures or procedures that promote organisational/institutional change.

This implies that programmes and strategic decisions for products and services quality improvement and development should congruently/concomitantly pair programmes and strategic decisions that encourage scarce skills development in the public and private organisations (technical skills development, positive human capital capacity development and skills waste alleviation). Therefore, stakeholders operating in the oil field should develop more awareness in order to promote human capital capacity development in the workplace. For example, the success for long-term sustainable socio-economic transformation in the country, without positive human capital capacity development could be an illusion. Contrary, policies, programmes and strategic plans improvement and development, could constitute a push strategy to supporting positive human capital capacity development in the process of eliminating corruption, inequality, unemployment, poverty, etc., through promoting employment and economic growth (Manuel, 2011). The vision for developing positive human capital capacity must take account of functional, technical and behavioural capacities development (IFC, 2014). However, without drastic investments to support positive human capital capacity development (functional, technical and behavioural capacities development), the achievement of the B-BBEE objectives and the vision for socio-economic transformation could simply be delusion or unachievable, given that human capital capacity development is what makes structures, system and environment to change and work.

MATERIALS AND METHODS

Challenges Affecting the Best practice of Capacity Development Programmes in the South African Petroleum Industry

Materials

Erasmus (2018); Hammond (2011) stated that South Africa has a dynamic skills development act that defines purpose and provides the understanding of skills development process 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 improve it productivity within the workplaces. Furthermore, skills development act provides structures to assist entry of the active workers to the workplace, for training and skills development within the workplace, and to regulate employment services (Erasmus, 2018; Hammond, 2011). However, despite the solid skills development structures, which provide a fascinated guideline for skills development in the workplace, there is still 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 model/framework (structures of skills training programmes, policies and strategic plans) is still meeting or facing critical challenges in the implementation process. In addition, the challenges of technical skills shortages and the deficit of positive human capital capacity expose the understanding that there is lack or low awareness from the public and private stakeholders to actively tackling the issue of skills shortages affecting the South African petroleum industry and society. Nevertheless, according to the (Department of Higher Education and Training Annual Report, 2016, 2017; Hammond, 2011), in South Africa, structures of skills development and training programmes are managed and coordinated by various organisations that are specialise in skills development. According to (Hammond, 2011), these structures include:

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.

The National Skills Authority (NSA), which is Responsible for

- Providing advice for the appropriate skills development policy and strategy and structural framework for the implementation of the skills development act; and
- Setting out the objectives to be achieved, and the specific indicators to be used for measuring successful implementation; and to conduct investigations on any aspect affecting the skills development act so that it can advise the minister accordingly (Hammond, 2011)

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).

In light of the aforementioned, these institutions/structures were established to develop skilled and productive workforce and to meet the requirements for socio-economic transformation in the country (Hammond, 2011). 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; CHIETA regional Skills Forums, 2020). Many issues 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 evidences, which demonstrate sufficiently that there are less efforts or awareness to improve or develop programmes, policies and strategic plans that can energetically tackle and bridge the deficit of positive human capital capacity, skills waste and technical skills shortages, which have a devastating impacts on socio-economic transformation process in the country.

Therefore, efforts and awareness from public and private stakeholders should be concentrating on the willingness to tackling these challenges, at the same way the government of South Africa and private organisations were mightily committed to confronting COVID-19, which has the same detrimental socio-economic effects, similar to the negative effects caused by the deficiency of positive human capital capacity in the country. It can be critically agreed that positive human capital capacity deficiency in the South African society could have more detrimental socio-economic consequences than COVID-19, given that corruption, unemployment, inequality and many other social crises in the African society appear to be more harmful to the national economy. Therefore, in most cases, these socio-economic crises are caused by the lack of positive human capital capacity development.

Thus, the purpose for improving or developing the structures of skills development, including programmes, policies and strategic plans in the workplace is to supporting change through a range of statutes and policy that include the Skills Department 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 to improving or developing the range of statutes and policy consist of ensuring appropriate and available qualifications and of facilitating training delivery within the sector

to meet their share of national priorities. However, efforts and awareness are critically required there seem to promote the 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. Accordingly, the statements purpose of skills development act in South Africa, which needs to be improved in order to support and promote human capital capacity development in the workplace, is presented in Figure 1.



FIGURE 1
THE PURPOSE OF SKILLS DEVELOPMENT ACT IN SOUTH AFRICA

Source: Adapted from Hammond (2011)

Figure 1 clarifies the purpose of 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 skills development act, which support structures of skills development in the workplace, studies have revealed that there are still recurrent issues related to scarce skills development: technical shortages, skills waste, the deficit of positive human capital capacity and the lack of capacity development programmes best practice for job-related skills development of employees in the public and private sectors (Machika, 2014). Therefore, whether at the managerial or lower levels of operations, these challenges are having negative impacts on job-related skills development of employees.

Challenges Affecting the Best Practice of Capacity Development Programmes in the South African Petroleum Industry

It was stated earlier that components of the PESTIE factors (Smit, 2016) were examined to understand the challenges affecting the best practice of capacity development programmes in the South African petroleum industry. In addition, it was also demonstrated that skills shortages, skills waste and the deficit of positive human capital capacity in the South African petroleum industry/society could originate from various sources, including the PESTIE factors. 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. According to (Reza, 2007), 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) 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 in other public or private organisations can arise either due to an absolute scarcity of skills or due to a relative scarcity. Furthermore, 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. Moreover, 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). In light of the aforementioned, (Asmal, 2010) indicated that challenges affecting the best practice of capacity development programmes in the South African petroleum industry are also those that are causing skills shortages, skills waste and the deficit of positive human capital capacity, as well as unemployment, inequality and poverty persistence in the country. However, it is acknowledgeable that not all of the reasons/challenges have to deal with the capabilities of workers/people; many have to deal with the best practice of existing assets/resources or social values best practices.

Accordingly, challenges affecting the best practice of capacity development programmes in the South African petroleum industry could consist of external and internal factors. The external factors are related to the PESTIE factors, while the internal factors are linked to low/little efforts, action or genuine awareness from management to continually promoting and supporting programmes of capacity development interventions. For example, internal factors may include insufficient/limited resources investment on employees' capacity development; workforce low motivation to skills development programmes and insufficient skills training interventions in the petroleum industry (Machika, 2014). According to (Smit, 2016), the political, economic and social components of the PESTIE environment are the external factors, which are mostly affecting the best practice of capacity development programmes in the South African petroleum industry and which are causing the lack of scarce skills development in the workplace.

In the Political Environment

Factors such as lack of policies; laws/legislation and regulations improvement and best practice (for example, the lack of improvement of immigration laws to attract international scarce and suitable skills, which are not sufficiently developed in the country) are affecting efforts to bridge the gaps of technical skills shortages, whether in the petroleum industry or in various other sectors of the national economy (Smit, 2016). These factors/challenges are very critical and need to be considered when planning to improve or develop a model of capacity development that can contribute to close the gaps of skills shortages in the South African petroleum industry. According to (Erasmus, 2014), the current labour laws and the employment act (No 55 of 1998) are example of how the political environment influences the management of the business. This implies that the improvement of the employment act could be necessary in order to support the best practice of capacity development and promote scarce skills development in the workplace. However, the lack of improvement of the current labour laws and the employment act could keep the situation of technical skills shortages unchanged in the petroleum industry. According to (Erasmus, 2014), the companies act (No 71 of 2008) replaced the companies bill act (No 61 of 1973) amended to corporation act (No 69 of 1984) not to support the critical tasks facing the business to develop scarce skills, and retain well-qualified or skilled employees in the

workplace, but to define the relationship between companies and their respective shareholders or members and directors; to respond to globalisation and the advent of democracy; and to simplify company registration and maintenance. Thus, it is imperative to shape and improve a new legislation, as well as model of capacity development that support a strong and productive partnership with professional of skills development (providers), which are expert in equipping/empowering the workforce with specific required skills/knowledge. Such legislation and model may also contribute in the improvement of existing structures and framework of skills development. However, an improved legislation and a suitable model of capacity development should bring together operational partners, including government, banks, educational institutions and the petroleum industry (public and private institution) to support and promote scarce skills development in the workplace.

In the Economic Environment

According to Erasmus (2014), the economic environment is influenced by the course of technology development. In other words, technology is responsible for change in the business environment, and particularly in the economic environment. However, the business environment is influenced by changes in the technological, political, social, ecological and international environments. All these changes require capable or skilled human capital. Capacity development programmes assist employees to improve and develop their skills, and adapt themselves with new technology or upgraded/innovated equipment, which might contribute to organisational competitive advantages. The fundamental effect of new technology could probably be high productivity. Without doubt, high productivity is a function of developed skills/abilities that can produce more and better products/services with keener competition, compelling stakeholders 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, 2016).

In light of the aforementioned, (Zino, 2014) described capacity/knowledge/skills development in terms of innovation as a process of improving and applying available/existing capabilities/talents/abilities in order to solve current organisational challenges and create new solutions by considering patterns in existing situations/environment. In addition, 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 the innovation factor, (Folscher, 2006) indicated that constraints that could hamper goals achievement in terms of skills development in the petroleum industry or in the workplace might comprise the following fundamental aspects:

1. 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;
2. 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;
3. Direct and indirect costs of training: Training costs 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;
4. 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 in order to prevent the failure of skills and career development initiatives; and
5. 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 the Social Environment

According to Erasmus (2014), the social environment affects the management of the business directly in the form of employees working for the business and indirectly, in the form of employees' behaviour in the workplace. Within an organisation, the way of life of a group of people influences the individual's way of doing things. This implies that people in the workplace are influenced by the values, expectations, laws and regulations, etc., that dictate the role, function, culture of employees in the workplace. Thus, in the workplace or in society, people become largely the products of their environment. Therefore, in the workplace, the level of education affects greatly management and other socio-economic activities within the organisation. Capacity development programmes become necessary in the workplace, where the level of education is required to be increased due to the business environment change or technological advancement. Capacity development raises the level of skills of both managers and workers in sectors where the demand for skills development is more required. Thus, skills development means new skills training programmes being made available to managers and employees regarding the quality of products or services to be provided, as well as change of condition in the workplace and in society (Erasmus, 2014).

In light of the aforementioned, elements of social environment that may possibly cause the lack of capacity development best practice and the persistence of skills shortages, skills waste and the deficiency of positive human capital capacity development in the petroleum industry could be linked to the lack of appropriate and best practice of skills training programmes (skills training programmes innovation and best practice could be considered as the vital motive for employees' capacity development in any organisation). Furthermore, such as stated earlier, an irrelevant training budget (the cost of innovation) and inadequate training policies usage (lack of training policies best practices) could be added amongst components that may possibly cause the persistence of skills shortages in the South African petroleum industry. Moreover, elements such as the lack of best practice of organisational culture (including values, behaviour, etc.) could have significant negative impacts on the best practice of capacity development programmes in the petroleum industry (workplace).

In conclusion, it can be agreed that all factors presented further above are influencing or affecting the petroleum industry in various ways. In summary, factors, which could lead to skills shortages in the petroleum industry may include a decline in skills training programmes initiative 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). In addition, (Reza, 2007) emphasised that poor level of investment by organisations in personnel training is an important factor slowing down scarce skills development or causing technical skills shortages in the petroleum industry.

Capacity Development Programmes as a Vital Tool to Scarce Skills Development in the Petroleum Industry

With regard to addressing or solving issues that are causing skills shortages, skills waste and the deficit of positive human capital capacity in the petroleum industry, capacity development programmes appear to be one of the appropriate and indispensable complements to apprenticeships and as a key approach to skills development for high, intermediate and low-level skills. However, factors that could contribute to alleviate skills shortages and promote skills development in the workplace relate mostly to the modernisation or transformation of the public and private system, as well as research development in area of capacity development programmes best practice (Reza, 2007). In addition, technological innovation is an important factor of capacity development best practice, which stimulates the ability to forecast the implications of forces in the business environment for managerial

decision-making. Priority for specific skills to be developed depends on organisational needs/requirements for improved performance, increased productivity, and profitable competitive advantages. 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 its decision-making in order to maximise profitability.

In the Public and Private Organisations

Capacity development programmes can enable management in the public and private organisations to identify threats and challenges from the business environment in good time and where possible, transform these into opportunities (Smit, 2016). Accordingly, failure to constantly develop the skills of managers and workers in the petroleum industry could result in a situation where systems or structures remain unchanged, underdeveloped and out of modern technological competitiveness. Therefore, if change, improvement and development are not in the agenda of any organisation whether in the public or private organisations, then skills shortages will remain persistent and the organisation will suffer the lack of innovation and performance. As a result, persistent skills shortages will generate weak productivity, which also could slow economic growth as well as the socio-economic transformation process. According to (Smit, 2016), other motives related to capacity development programmes as a vital tool to scarce skills development in the public and private sectors include the nature of business environment instabilities or unequal distribution of productive assets in society. For example, poor people have very limited resources (capacities/abilities) to meeting the requirements where the demand for qualified/skilled people is advertised, where many have only their own low skills labour to use or sell. In all occurrences, the capabilities of people however remain a limiting factor in the attainment of socio-economic transformation goals. Therefore, capacity development programmes as a strategy to supporting human capital capacity development in public and private sectors seek to address the problem of technical skills shortages, skills waste and the deficit of positive human capital capacity in an efficient way. Thus, at the heart of the proposed capacity development programme strategy in the workplace is the belief that enhancing the general and specific abilities of all workers is a necessary response to bridging the gaps of skills shortages, and indirectly alleviating socio-economic challenges such as poverty, inequality and unemployment, which should be set within the overall economic, employment and social development programmes of the public and private organisations. In the public or private organisations, to realise their potential, workers need knowledge, skills and self-governing values improvement (workers' self-governing values can be built/developed through training programmes that consider not only human technical skills development, but also all other dimensions of positive human capital capacity).

Accordingly, without a doubt, there are people who have skilled labour to sell and they cannot find buyers because there are not enough jobs or their skills do not match the demands; or there is no systematic process for accurate information to flow between government, the workplace and labour market. However, capacity development programmes can help developing the specific skills that can match the demands. Yet, capacity development programmes whether in private or public sectors can prevent skills shortages problem. The (OECD, 2015) indicated that investment in skills development could help the overall organisational 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 can be the right approach to human capital capacity development and to business sustainability and prosperity.

Innovation as Factor that Promotes the Best Practice of Capacity Development Programmes in the Workplace

Capacity development programmes as a vital tool to scarce skills development in the petroleum industry can generate innovation. Innovation may be considered as one of the most critical factors influencing capacity development programmes in the petroleum industry or in any organisation. (Willson, 2001) stated that technological innovations are changing jobs and organisations. This suggests that sophisticated information technology necessitates training for change. In other words, skills development is a key for the organisation to adapt to information technological transformation. According to the (OECD, 2015), 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) 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) 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. Innovation should not hinder the progress of the organisation, but facilitate organisational development. Furthermore, (O'Connor, 2007) 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) (O'Connor, 2007). Therefore, the innovation model can serve as a reminder of the need for the best practice of capacity development programmes as well as 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 of capacity development is to be developed and used. (O'Connor, 2007) 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; O'Connor, 2007) 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). However, it is through human capital capacity development that innovation is generated. Thus, effective capacity development programmes or successful skills development programmes can bring together public and private sectors (OECD, 2015). Therefore, there is a growing evidence indicating that the governments of developing countries are failing to fully equip their populations with the skills that are required in an increasingly dynamic and inter-dependent economy and/or are failing to make good use (skills waste) of the skills that people have (Rodrik, 2007).

This implies that low awareness or lack of capacity development programmes usage in the developing countries can be a critical cause of low skills development (skills shortages) and of socio-economic deterioration (OECD, 2006). Thus, different approaches could be applied to tackling and solving the issue of persistent skills shortages in the workplace. The best practice of capacity development programmes or quality skills training programmes can facilitate scarce skills development in the workplace. However, it can be broadly agreed that positive human capital capacity deficiency, morale and other abilities deficiency from commitment to doing the right things or commitment for excellence, productivity, efficiency and effectiveness in carrying out creative and inventiveness tasks 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 displays not only a decline or degeneration of 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, such as stated earlier, the best practice of capacity development programmes associated with improved programmes, policies and strategic plans could solve the challenges related to skills shortages in the workplace.

If nothing is done in order to bridge the gaps of these critical challenges in the private and public sectors (including the petroleum industry), then there will not be expectations for change in the South African petroleum industry. The socio-economic situation will face a fatal degradation condition and there will not be any prospects for possible manifestation of people lifestyle improvement in the country. This is because the energy sector and particularly the petroleum industry is one of the key players and major contributor to the South African GDP growth (SAPIA Report, 2016). Meaningfully, it was necessary in this study to explore and understand the challenges affecting systems and structures of capacity development programmes in the public and private organisations, including the South African petroleum industry, before attempting to formulate and describe a model of capacity development that can contribute in tackling and solving the issue of technical skills shortages and other scarce skills in the workplace.

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 emphasise again that South Africa has very dynamic structures of capacity development, which is supporting and promoting employees' skills development in the workplace. But, these structures require a push force for their innovation and modernisation. Programmes, policies and strategic plans improvement are sine qua non conditions prior to ensure the best practice of capacity development programmes in the workplace. Thus, technical skills development, skills waste alleviation, and positive human capital capacity development in any public or private organisations, including the South African petroleum industry will require willingness, awareness, resources and full participation of stakeholders in the process of scarce skills development.

METHODOLOGY

Exploring and evaluating the impacts of capacity development programmes best practice on human capital capacity development for the petroleum industry development and socio-economic transformation in South Africa required mixed measurements. Therefore, the triangulation methods were applied to gathering and analysing the research information. Furthermore, triangulation approaches were applied in this study to achieve a clearer view of the aim and objectives, which were reached through combining both quantitative and qualitative data (Creswell, 2015). 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. Moreover, in this study, triangulation consisted of mixing data from quantitative and qualitative approaches accompanying with the convergent parallel mixed methods design, so that diverse perspectives 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 the initial pilot study. Thus, in this study, triangulation approaches were applied by converging the survey data and the interview data for the purpose of reflecting interaction, priority, timing and mixing data in the process. Consequently, together, the challenges and effects of capacity development programmes best practice 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 experienced managers from the South African Petroleum Industry Association (SAPIA), the Government Department of Energy, the Chemical Industries Sector Education and Training Authority (CHIETA) and Engen Refinery. Respondents from these organisations were cooperatively interviewed in order to gain deeper understanding and additional information concerning the influence that capacity development interventions could have on human capital capacity development, organisational development and socio-economic transformation process in the country. However, structured questionnaires with closed and open-ended questions were distributed to employees from the aforementioned 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 capacity development programmes best practice could have on employees' performance and productivity in the petroleum industry.

However, Creswell (2018) indicated that the steps in mixing data analysis methods involve using quality statistical and thematic software programmes. 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 & Hall, 2012). According to (Chen, 2019), Partial Least Squares (PLS) can solve both single and multi-label learning problems. Furthermore, (Pirouz, 2006) 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) 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 identify factors which are a linear combination of the explanatory variable X (Known as latent variable) and variable Y (response), (Pirouz, 2006).

The PLS model was applied in this study because it is an efficient alternative tool, more advanced than SPSS (Kodua, 2019). PLS is widely practical in the business and social sciences in order to predict endogenous latent variables, and to estimate as well as test relationships between latent variables (causal analysis). Moreover, 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 through descriptions, inferential statistics, charts and frequencies. Thus, 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). In

addition, the purpose of this converged parallel 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.

RESULTS AND DISCUSSIONS

Findings from Quantitative and Qualitative Results following the Political, Economic and Social Components of the PESTIE Variables

In this paper, the results are presented at a descriptive and inferential level. The components of the PESTIE factors, including the political, economic and social variables were used to analyse and discuss the influence capacity development programmes best practice could have on human capital capacity development in the petroleum industry for socio-economic transformation in South Africa. In this study, the following codes and abbreviations were applicable:

- PESTIE: Political, Economic, Social, Technological, International and Ecological;
- ContFac=contributory factors;
- NCDvT=nature of capacity development;
- CDPC=capacity development programmes contribution;
- SCDP=skills capacity development programmes;
- QNR=Quantitative Results;
- QLR=Qualitative Results.
- QLR1 to QLR9 represents the code allocated to respondents from the thematic analysis (Nvivo 12 Pro)
- R=Respondent

Inference of Quantitative and Qualitative Results

In mixing the QLR and QNR from data collection, (Creswell, 2015) indicated that the way to merge two databases, namely one numeric and one text-based, is called explanatory sequential design. Therefore, the purpose of the explanatory sequential design for this study was to analyse the aim and objectives defined by reference, beginning with a quantitative strand (a strand refers to either the quantitative or qualitative component of a study). This was done to both collected and analysed data, followed by qualitative analyses that explained the quantitative results. In this study, the inferences from the qualitative results assisted in explaining the quantitative results. Furthermore, explanations were made in relation to the objectives of the study, which are relevant to the PESTIE framework. The sub-themes from the quantitative results were many, hence only the key components relevant to the objectives of the study were included in Table 1 below. According to Creswell (2015), Table 1 relates to mixed methods design for data analysis and assists in identifying the qualitative results that explain the quantitative results.

Table 1		
INFERENCE OF QUANTITATIVE AND QUALITATIVE RESULTS		
Factors	Themes: Quantitative Results (QNR)	Sub-Themes: Qualitative Results (QLR)
	The lack of public ability to enforce policies that promote capacity development can result unfortunately in deficiency of human capital capacity development.	In my perception (R1), in South Africa, we are good in developing policies or strategies in any sector, but implementation can be delayed because of financial constraint (QLR1).
Challenges		

Barriers affecting the best practice of capacity development programmes from the public environment	Unawareness or inadequate implementations of policies that support capacity development best practice can result on employees' skills deficiency in the petroleum industry.	
		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 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).
		There are limited 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 (a year or more) (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 (R7): within any sector in South Africa, we are good in developing strategies, but the implementation can be delayed because of financial constrain (QLR7).
		Funding, lack of motivation, lack of monitoring with necessary effects are amongst barriers that are obstructing the process of implementing capacity development programmes in the petroleum industry (QLR1).
		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).

Challenges/		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).
Barriers affecting the best practice of capacity development programmes in the petroleum industry		
		Worksite access for interns is a challenge (QLR9).
	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 can 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.	
	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.	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).
Challenges/	There exists planned financial statements/budget for skills training programmes in the petroleum industry.	
Barriers affecting the best practice of capacity development programmes from the economic environment		
		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 in the petroleum industry has promoted and increased opportunities for entrepreneurship or related new small business development in the country.	
		Capacity development programmes is important in the way that it contribute in 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). But, lack of motivation to skills development programmes (Some employees are lazy), remains a real challenge (QLR6).
	Technical skills shortages affecting the petroleum industry are related to employees' lack of interest to technical skills training programmes provided.	There exist local providers of capacity development programmes. I participated (R2) 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, TEMESSION, etc.) (QLR3).
Challenges/barriers affecting the best practice of capacity development programmes from the social environment		Yes, there are local providers of capacity development programmes in the South African petroleum industry (QLR4). But, the improvement of mechanism that promote capacity development framework could assist to supporting human capital capacity development in the workplace.
	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.	

Source: Self-generated by the researcher

Mixing of QNR and QLR Key Results Related to the Challenges Affecting the Best Practice of Capacity of Capacity Development Programmes in the South African Petroleum Industry

In the QNR data collection, respondents were required to identify the probable challenges/barriers that are affecting the implementation/best practice of capacity

development programmes in the South African petroleum industry. The key QNR results are as follow:

- **CCDP 1.3:** 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;
- **CCDP 2.2:** 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;
- **CCDP 2.3:** 92.1% of respondents agreed that technical skills shortages in the petroleum industry are result of neglecting or lacking an appropriate model of capacity development as a vital tool to employees' technical skills development; and
- **CCDP 5.1:** 92.8% of respondents recommended that capacity development programmes need to be sufficiently explored, promoted and applied to strengthening the abilities of employees in the petroleum industry.

In the QLR data collection, respondents were required to indicate what could be the probable challenges/barriers, which are affecting the implementation of capacity development programmes in the South African petroleum industry. The key QLR results are as follow:

- In South Africa, we (R1) 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 delay (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, lack of monitoring with necessary effects are amongst barriers that obstruct the process of implementing effectively capacity development programmes in the petroleum industry (QLR1);
- Challenges that are affecting the best practice or implementation of capacity development in the petroleum industry are mostly related to the time frame for trainees, which have 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); 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 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 in order to support 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).
- 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).

Thus, there could be many other internal challenges affecting the best practice of capacity development programmes in the South African petroleum industry. For example, organisational culture, behaviour, values, mission, vision, etc., lack of improvement can also stand as barriers to the best practice of capacity development programmes in the public and private sectors. Mostly, the traditional culture of the organisation which implies the routine way in which things are getting done can affect any attempt to promoting innovative way of delivering services or producing products. Capacity development programmes best practice is essentially needed to break the strong hole of traditional system/structure and assist organisations to adapt to the pace of technological advancement (the 4th IR) to avoid the risk of being left behind. This suggests that Capacity development programmes are a must or indispensable for organisational competitive advantages, performance, productivity, growth and development.

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 for 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 stimulate human capital capacity development in the workplace;
- The lack of appropriate model of capacity development as a vital tool to employees' technical skills development;
- Capacity development programmes need to be (is 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 delay;
- 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 in order to support 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. Worksite access for interns is also a challenge;
- Technical skills drain: the petroleum industry is experiencing a severe loss of experts (technical skills shortages) that are leaving the country for better conditions in other world regions, due to the lack of motivation and retention as well as lack of policies improvement and best practice in the petroleum industry. The lack of monitoring 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, which 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, which cannot cope with long distance skills training programmes that take long. In some cases, some workers are not interested in skills training programmes. For example, supervisors and managers mostly do not show interests to attend skills training programmes in the workplace. Some employees are lazy to participate in skills training programmes;
- 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 best practice is important in the way that it could contribute in sharing innovative ideas to fellow employees in the workplace and improve and develop the ability of workers to share ideas that promote the organisational development. Furthermore, respondents indicated that being away from work and leaving work for outdoor training programmes is a challenge: more workload are to be managed thereafter, therefore, they suggested that workshops and training programmes provided indoor or in the workplace could be more effective, feasible and much easier to manage. Moreover, respondents have required 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 emphasis on quality partnership with local providers of skills training programmes, and develop a model of partnership 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 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, in-depth research study should be undertaken to identify additional challenges/barriers related to capacity development interventions in the petroleum industry, to promote employee's commitment to capacity development programmes in the workplace, to develop an appropriate model of capacity development programmes that accommodate employee's time availability to participate to workshops and training programmes, whether in door or out door. Funding to supporting employees that would like to improve or increase their level of education in various academic institutions should be arranged or made available in a correct period of time.

CONCLUSION

Challenges affecting the best practice of capacity development programmes in the South African petroleum industry was explored and examined in this paper. Therefore, it was indicated that there could be various (internal and external) factors affecting the best practice of capacity development programmes in the South African petroleum industry. Mostly, the political, economic and social factors of the PESTIE environment were identified as the prevalent factors affecting the best practice of capacity development programmes in the South African petroleum industry. Thus, in this study, respondents revealed the following:

- **CCDP1.3:** 83.4% of respondents revealed that the lack of policies best practice in supporting capacity development programmes is amongst the key barriers affecting technical skills development in the petroleum industry;
- **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 and other scarce skills in the workplace (positive human capital capacity development) or in the petroleum industry are result of neglecting or lacking an appropriate model of capacity development that can serve as a vital tool to employees' technical skills development and the retention of technical skilled employees in the country; etc.

Moreover, respondents exposed the following

- The lack of awareness, policies best practice and motivation (some employees are lazy: QRL6) to ensure the development and retention of technical skilled employees, lack of monitoring with necessary effects are amongst barriers that obstruct the process of implementing efficiently and effectively capacity development programmes in the South African petroleum industry (QLR1);
- One of the challenges to capacity development programmes best practice 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).

In addition, a decline in undertaking efficiently skills training programmes initiative; the insufficient practice of technical skills training programmes (are not available) at all qualification and occupational levels; the lack of appropriate 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) were identified amongst the significant barriers that are causing technical skills shortages and skills drain in/from the South African petroleum industry (Reza, 2007). Moreover, the poor level of investment by organisations in personnel training is an important factor slowing down scarce skills development or causing skills shortages in the petroleum industry. Research indicated that, there is a growing evidence showing 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 (skills waste) of the skills that people have (Rodrik, 2007).

This implies that there is low awareness, efforts and limited resources in terms of supporting and promoting capacity development programmes best practice in the developing countries. These two challenges (low awareness and limited resources) can be the essential cause/source of lack of scarce skills development (technical skills shortages or skills drain), skills waste and the deficit of positive human capital capacity, and consequently, source or cause of the growing unemployment, poverty and inequality affecting socio-economic transformation process in the developing countries (OECD, 2006). Thus, Table 1, inferences of Quantitative and Qualitative results established further above, provides evident details concerning the challenges obstructing scarce skills development in the South African petroleum industry, as well as in other public or private sectors. Accordingly, different approaches could be applied to tackling and solving the issue of persistent scarce skills shortages in the South African petroleum industry. With regard to solving these issues that are causing skills shortages in the petroleum industry, capacity development programmes best practice appear to be an indispensable complement to apprenticeships and as a key approach to improving or developing scarce skills for high, intermediate and low-level skills. However, factors that could help reducing skills shortages, skills drain or promote scarce skills development in the workplace relate mostly to the innovation and development of public-private system/structures of skills development, as well as the encouragement of research development in area of scarce skills development. Therefore, capacity development programmes strategy in the public or private sectors, including the petroleum industry, is to provide a dynamic framework or plan that can ensure that workers are continually equipped with creative and innovative skills and knowledge that will enable them to participate fully in promoting change, modernisation, transformation and development. However, capacity development programmes best practice whether in the private or public sectors could be preventive to bridging and solving skills shortages problem or developing scarce skills, which are indispensable for organisational development and socio-economic transformation in the country. Therefore, positive human capital capacity development could be a locomotive key factor for overall social and economic activities development. The (OECD, 2015) 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. In conclusion, without a strong public-private partnership and without investing much efforts, resources and engaging a heartily awareness in order to campaigning, supporting and promoting scarce skills development in the workplace (public and private institutions), scarce skills shortages and technical skills drain will remain persistent.

No actions will be successful in terms of developing scarce skills without investing efforts, awareness and resources to improve or develop policies, programmes and strategic plans that support scarce skills development in the workplace. Furthermore, efforts will be unsuccessful if employers and employees are not cooperatively committed in the process of capacity development programmes best practice in the workplace. Stakeholders (Government and private investors) have the responsibilities to develop a model that could facilitate scarce skills development in their respective structures. Thus, it is of great value to predict that capacity development programmes best practice is the right approach to human capital capacity development and to business sustainability and prosperity. Yet, it is through human capital capacity development that effective capacity development programmes or successful skills development programmes can bring together public and private sectors to bridging the gaps of technical skills shortages in the South African petroleum industry, as well as in several other sectors of the national economy.

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